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# Railway Age

AND RAILWAY REVIEW

FIRST HALF OF 1928—No. 20

MAY 19, 1928

SEVENTY-THIRD YEAR

## AMERICAN BROWN BOVERI

*announces*

**A**MERICAN BROWN BOVERI ELECTRIC CORPORATION wishes to make known the fact that readjustment of its manufacturing facilities and reorganization of its engineering and operating personnel have been completed under the direction of a new administration, American-controlled.

Contractual relations covering patents, designs, manufacturing information, etc., have been revised and renewed with Brown, Boveri & Co., Ltd. of Baden, Switzerland.

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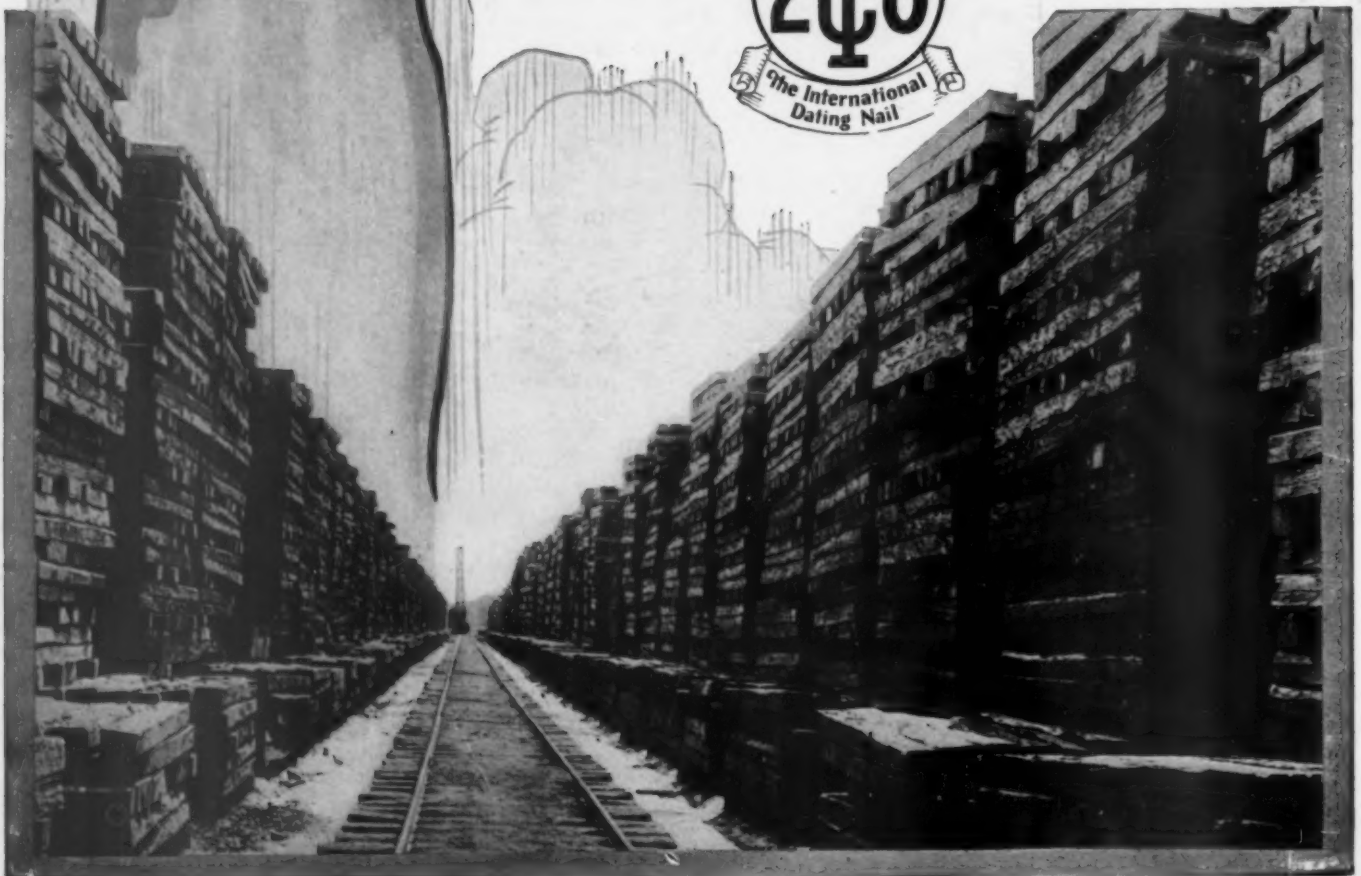
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# Railway Age

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B. & A. Train Passing Wellesley, Mass.

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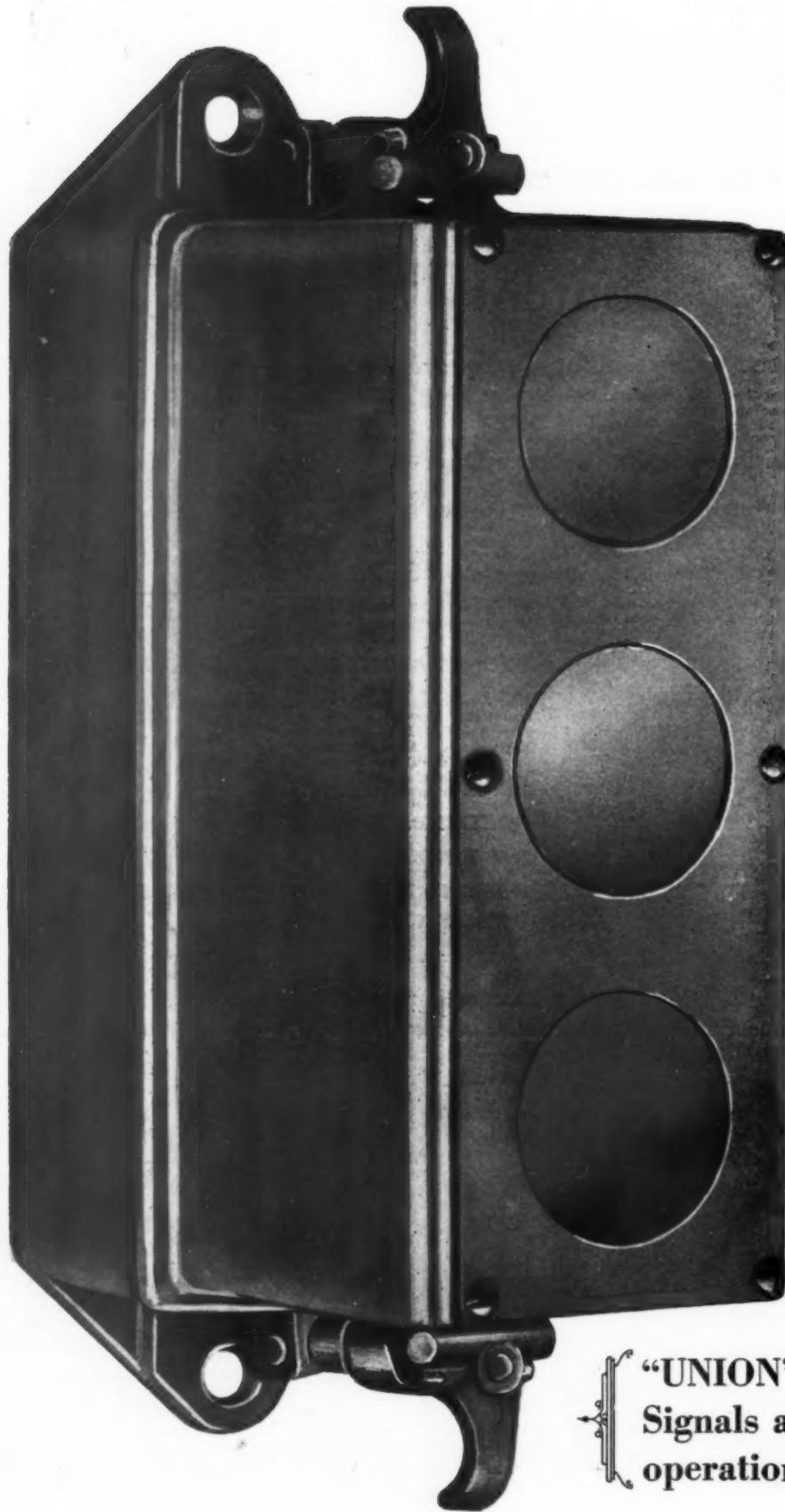
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# *Instantly Displays*



**PROCEED**  
(GREEN)

**CAUTION**  
(YELLOW)

**STOP**  
(RED)

“UNION” Continuous Cab  
Signals are now in service  
operation on 17 railroads



# Railway Age

Vol. 84, No. 20

May 19, 1928

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## Seniority and Apprentices

**T**HE so-called national agreement with the shop crafts is greatly in need of attention, in one respect at least. Unlike the practices on some roads in the former days, and on certain roads not now operating under the national agreement, a shop crafts apprentice has no seniority rights when he is out of his time. Although he has actually been in the service for at least four years, he may have to seek employment elsewhere when he completes his time, in favor of a man who may have been engaged from the outside only a comparatively short time before the apprentice finished his training. Is there any sound, common-sense reason why the graduate apprentice should not have seniority rights for at least a part, if not all, of his time of apprenticeship?

## A Profitable Investment in Grade Crossing Protection

**T**HE elimination of approximately 50 train stops a day by automatic interlocking protection at a main-line crossing of the Chicago & Eastern Illinois with a branch line of the Illinois Central at Sullivan, Ind., described elsewhere in this issue, has effected a saving of over a thousand dollars a month. These new facilities represent an investment of \$11,600, hence the return on this investment is more than 100 per cent annually. Moreover, owing to the physical conditions at the crossing, train operation has been improved considerably. It is no longer necessary to stop westbound trains on the Illinois Central on a  $1\frac{3}{4}$  per cent grade. Neither is it necessary to stop northbound trains on the 0.8 per cent grade on the C. & E. I. Automatic signal protection for railway grade crossings has proved to be just as reliable as automatic signaling for single track operation, and the possibilities of saving money are frequently more attractive.

## Railway Fuel Convention

**I**T is not easy to summarize the conclusions or measure the benefits of a convention such as that of the International Railway Fuel Association, held at Chicago, May 8 to 11 inclusive, as reported in this and the preceding issue of the *Railway Age*. With the comparatively limited experience of only 20 annual meetings, this aggressive young association put on a program which was highly instructive and inspiring. Twelve individual papers and addresses and 13 committee reports were presented, containing a wealth of information on practically all phases of fuel and related economies. Between 800 and 900 members were present at many of the sessions and the only criticism heard was that this large attend-

ance placed somewhat of a damper on the free and complete discussion of most of the committee reports. If the association continues to grow as seems probable, it may ultimately prove necessary to divide the program into a few sessions of general interest attended by all members, and a number of smaller simultaneous sessions of groups with specialized technical interests. In this way discussion might be stimulated, varieties of opinion developed and no room left for the claim that members can get as much benefit by reading the reports at home as by attending the convention. If any single sentiment may be said to have been the "keynote" of the recent fuel convention, it was that, in spite of notable past accomplishments in railway fuel saving, further economies are not only possible but essential, and depend largely on more intensive co-operative efforts by men in all departments of railway service.

## Highway Transport Regulation

**R**EGULATION of interstate highway motor transport apparently is a dead issue as far as the present session of Congress is concerned. This is to be regretted, yet not wondered at, considering legislative lethargy whenever votes apparently are not jeopardized by a do-nothing policy. There is no reason in logic or justice why interstate highway motor transport should not be regulated, and there are a score of reasons why it should be. Where rails are to be laid down in a public highway there is never any question that public consent must be obtained. How much more reasonable it would be to require similar consent for the operation of a common carrier which does not use rails which it maintains at its own expense, but the public highway itself. Yet, as far as interstate operations are concerned no such consent is required. Intrastate regulation is almost universal. Is there any logic in restraining the intrastate operator and not the interstate? Some private interests assert that there is no public demand for regulation. Yet does anyone believe that the states would relinquish their regulation of highway motor coach transportation? Of course they would not, for chaos would result if they did, even as it now exists in large communities on state lines in the absence of interstate regulation. Can there be any better proof of the need for and the effectiveness of regulation for highway transportation than the success of the regulatory plans in almost all the states? The assertion that no need or demand for regulation of interstate highway transportation exists is entirely disingenuous and should be scotched whenever it is made. We believe that the railroads, the public utility commissioners, the street railways and the highway operators, who have agreed on a program of legislation, should now carry their campaign directly to the public. Justice, logic and the public necessity so strongly point to early remedial legislation that, properly presented to the public, such

a program ought easily to gain support to insure early action when Congress re-convenes. A campaign to secure this public support can well be begun without loss of time.

### *Burying the Hatchet*

**THREE** subjects concerning electric traction, which would have been dangerous to mix a few years ago, were discussed last week in New Haven, Conn., at a regional meeting of the American Institute of Electrical Engineers. The subjects were power contracts, frequency changers and mercury-arc rectifiers. Power contracts by itself is an inherently controversial subject, since it involves bargaining between the railroad as purchaser and the public utility as seller. A frequency changer is to an alternating current traction system what a mercury-arc rectifier is to a direct current system and the question of system is still a live one. Furthermore, inductive interference to communication circuits caused by rectifiers involves telephone or telegraph companies and power companies; they can, however, provide means for correcting the difficulty. The most interesting feature of the meeting was that all of the subjects were discussed without rancor and without undue controversy. One may speculate as to the reason. Perhaps because utility companies have grown so large, rivalry has disappeared and these subjects are being handled by engineers who have much more interest in solving the problem than they have in gaining advantages for their company as opposed to some other. Quite evidently there are now in railroad service a number of engineers of electric traction, capable of properly evaluating the many factors involved in electrification. It is a situation that gives promise of orderly development.

### *Disappearing Dinner Pail*

**D**O you remember the wonderful dinner pails that were so commonly used by freight trainmen and enginemen a few years ago? Built especially to order, many of them could readily accommodate three or four meals for a hungry man. Some of them cost as much as several dollars apiece. And how wonderfully they were packed to keep the food in good condition and in the order in which it was to be used; this in itself was quite an art. A group of railroad officers in discussing the results of the speeding up of freight train operation and the increased efficiency of the service, commented upon the fact that the "hog law" has almost been forgotten on some roads, so seldom is it involved in present-day freight train operation, and that many of the freight train and enginemen do not now carry their meals with them. On a certain 110-mile division, for instance, heavy freight trains which now make the run in four or five hours, formerly were frequently tied up under the "hog law."

One of the reasons for this improvement was stated in a rather unique way and gives some explanation of why freight locomotives are now giving such an excellent account of themselves. When the ball is passed to a football player his team-mates do their utmost to interfere with and prevent the players on the other side from catching him and downing the ball. In these days, when a locomotive is given a train, every effort is made by the entire organization to keep it on the move and at the most economical speed, all things considered.

Vast expenditures have been made for better facilities and equipment and new and better practices have been introduced to this end. As a result, operating costs have been reduced and the public is greatly pleased with the improved service—and in many places the old-fashioned multiple-meal dinner pails for the members of the crew have almost entirely disappeared.

### *Who Buys Your Machinery?*

**I**N a group which included the purchasing agent and the superintendent of shops of a large railroad the conversation drifted to the subject of machine tools. The statement was made that machine tool manufacturers find it less expensive from a sales standpoint to sell machinery to an industrial plant than to a railroad, for the reason that it is necessary to call on only one or two men who, as a rule, are specialists in production matters and who have the authority to specify the purchase of certain makes of machines. The purchasing agent offered the opinion that, inasmuch as machine tools are such an important factor in industrial production, the manufacturer must have men in his organization who specialize in buying machinery and upon whose judgment the purchasing department must rely. He went on to state that, by comparison, machine tools play such a relatively small part in the entire operation of a railroad that the company could not well afford to assign a specialist in machine tools to the job of selecting shop machinery and as a consequence the railroad purchasing agent must exert a greater influence than his colleague in the industrial organization. The shop superintendent took exception to this opinion and countered with the statement that a railroad shop supervisor is in reality the specialist upon whose final judgment the purchasing agent must rely in cases involving the selection of specialized shop equipment.

In any well-managed railroad organization there should no longer be any question as to the functions of departments. Neither should there be any question as to which department—the mechanical or the purchasing—should exert the greatest influence in the buying of machinery. The functions of the two departments are not in any way alike and should not conflict. It is the function of the mechanical department to know its machine tool requirements with sufficient accuracy to be able to specify definitely the type of machines wanted. Such specifications may be broad enough to include two or three makes of machines or may be specific enough to name a single maker's product, depending on the nature of the service for which the machine is required. Every request for a new machine tool should be so well backed up by supporting data relating to possible economies and ultimate service costs that there can be no doubt but that the mechanical officer making the request knows exactly what he wants, and why. Given such facts, the only remaining function to be fulfilled is that of buying the machine which will meet the requirements specified, at the lowest prevailing market price—this should be the principal function of the purchasing department in the matter of machine tools.

Any conflict of authority between departments in such matters as the selection of the proper shop equipment can only result in loss to the company. If the mechanical department fails to get the kind of machine tools that its specialized knowledge enables it to select, the company will pay the cost in increased equipment maintenance. A few hundred dollars saved on the initial



cost of a machine not suited to the job for which it is intended may later be the indirect cause of engine failures involving thousands of dollars.

## Pension Allowances

REFERENCE was made in the discussion of pension costs in the *Railway Age* of May 5, 1928, to the report of the committee appointed by the British Board of Trade in 1908, to inquire into the constitution, rules, administration and financial position of the superannuation and similar funds of railway companies. This report, made to both the Houses of Parliament in 1910, was of more than ordinary interest because several of the British railways had had superannuation funds in existence for from 40 to very nearly 60 years. Prior to 1896 the pension allowances were based in general upon the average amount of salary received by the individual during the time that he had held membership in the fund and the total number of years that he had been a member. (These funds were on a contributory basis). This, with most of the funds, provided an allowance of 25 per cent of the average salary after 10 years of membership in the fund, and 67 per cent of the average salary after 45 years' membership.

Because of the continued growth of the accumulated funds, dissatisfaction on the part of the members over the smallness of benefits, and a desire for earlier retirement provisions in order to improve the service and increase the rapidity of promotions, more liberal provisions were introduced in most cases in the late nineties. This step, however, was taken contrary to the advice of the actuaries. As a result, it was shortly observed that the reserve funds were seriously affected and upon actuarial investigation it developed that many of them showed startling "deficiencies." It was for this reason that the above-mentioned committee was appointed to make a thorough and critical study of the railway pension funds.

The report included some pointed suggestions. It did not, however, attract any very great amount of attention in railroad circles in this country, possibly because, in general, British railway conditions differ so greatly from ours and we have so little in common. Obviously, however, with the coming to a close of the extensive period of railway development in this country and an intensification of operation, the conditions, so far as personnel is concerned, have become more nearly stable and comparable to those of the British railways. At any rate, observations from the extended experience of the British railways with pensions should be helpful to our railways.

Such American railroads as have established pension funds since the British report was made available in 1910, have apparently overlooked it and have based their plans closely upon those which were already in effect upon American railways. It is to be feared that comparatively little attention was given to actuarial studies, although the same thing can be said truthfully of most of the large industries which established pensions at the same time. As the financial demands of these pensions plans have steadily grown, however, and as we have witnessed the raising of great funds to provide proper reserves for the establishment of pension plans on the part of many organizations, there has been a growing recognition in the industrial field of the fact that many of the pension plans were not established

on the most stable basis. The railroads have had even more cause for anxiety, since no great efforts have been made to fund such plans, the common practice being to pay pensions from current operating revenues.

Because of these facts it may not be amiss to draw attention to a few of the more important conclusions which were reached in the British report. In the first place, most of the English pension allowances, when the investigation was made, were based upon the average salary for the last seven years before retirement, rather than upon the average salary during the entire time of membership in the fund. When the change was made from the latter to the former practice in the late nineties, it was found that there was an acceleration in the rate of retirement and a very serious loss to the funds. For this reason the British committee strongly advocated basing the pensions upon the average salary for the entire time of service. Incidentally, this also makes it possible to estimate more accurately the accrued liabilities to date, and future costs as well. Throughout the entire report there is an emphasis upon the fact that the establishment of a fund or any modifications in it should be made only after the most careful studies by actuaries. It is also recommended that statements of accounts and balance sheets should be prepared annually and that quinquennial valuation should be made of the funds.

American railway pensions, unlike those of the British railways, are not on a contributory basis. Most American railways now base the pension allowances upon the average salary for the last 10 years of service, and the total years of service. Thus far it has not been the practice of American railways to attempt to set up pension reserves based upon liabilities to date, or to add to the reserves to cover current liabilities, but rather to make the pension payments from the current revenues. A few American railways are now, however, attempting to work out ways and means of establishing reserve funds which will provide, at least partially, for liabilities thus far incurred. The problem of bringing this about is more or less involved because of the restricted earnings of the railways and the accounting regulations imposed by the Interstate Commerce Commission in connection with the recapture of excess earnings, etc. The matter is of so great importance to railway employees, as well as to the managements and the public, that it would seem desirable to stimulate a study of the problem on the part of all concerned, in order that adequate provision be made for safeguarding the future of the pension plans.

## Railways As Philanthropists

ANYBODY who surveyed the present railway situation and prevailing influences in the industry, without reading the news from the stock market, might conclude that the stockholders and managers of American railways had become altruists and philanthropists. The railways are rendering excellent service to the public. They are rendering it at a constantly declining average freight rate. They are paying steadily increasing wages to their employees. But how about the net return they are earning? It was 4.4 per cent on their property investment in 1927, or smaller than in any year since 1922, except 1924. It was a smaller percentage on property investment in the first quarter of 1928 than in the first quarter of any year since 1922, and this in spite of substantial reductions of operating



expenses, a large portion of which were made at the cost of maintenance.

Meantime the railways are being threatened with as many attacks as if they were highly prosperous. They are being menaced with reductions of rates under the Hoch-Smith resolution; there is widespread agitation for development of inland waterways to take traffic from them; the government is considering competing with them on a larger scale through its Inland Waterways Corporation; and numerous kinds of legislation to make reductions of rates easier and more certain is being introduced. The Senate has passed a resolution asking the Supreme Court to let a wholly irresponsible radical organization appear against them in the valuation litigation. All over the country damaging propaganda charging them with seeking an excessive valuation is being disseminated.

Meantime what are the railways doing to protect and increase their net operating income? They are constantly operating with more economy, but of what value is that to their owners if the results of it are constantly to be absorbed through reductions of rates and advances of wages? They have made strong and timely protest against the extension of government operation of the Mississippi-Warrior barge service. Here and there a still, small voice is raised in protest against the government's perseverance in a policy of regulation which is confiscatory measured by every standard known to law and economics. But it is no exaggeration to say that the railways are making no organized effort to combat the influences which, ever since they were returned to private operation, have prevented them from earning the return to which they are entitled, and which are now causing them to earn relatively the smallest net return in seven years.

Are the leaders of the railroad industry, like most other persons who are reading the news from the bull stock market, having their views of the railway situation and railway prospects influenced by the present prices of most railway stocks? If so, they should give more thought to the reasons for these prices. One of them is that for more than 15 years railway managements have paid small dividends to their stockholders and invested large amounts of earnings in the properties, with the result that the average investment represented by each share of stock is \$70 more than it was in 1910. In consequence, net income per share of stock has increased, while the percentage of return earned upon the investment has not increased, and one of the reasons for the present prices of many stocks is this increase in net income per share. But the investor is entitled to a reasonable return upon his investment; and the investor in railway stocks has not been getting this and is not getting it now.

The principal reason, however, for the present prices of railway stocks is not the net income being earned upon them but the unprecedented amount of capital seeking investment in the securities market. A somewhat similar condition existed more than twenty years ago, and contributed toward causing the stocks of the railways, which actually were much more prosperous then than now, to advance to a level approximately equal to that which they recently have attained. But between January, 1906, and January, 1908, the Dow-Jones index of railway stocks dropped from \$138 to \$90 a share, and in 1918 it was down to \$80 a share. "Easy money" may continue to be available and to keep up stock prices for a long period, but nobody knows that this will be the case. Net return is the true measure of railway prosperity, as well as of railway

legal rights and economic necessities, and it has not been satisfactory recently, nor are the prevailing influences affecting it encouraging.

It is not sarcasm to say that in one respect at least the railways are a highly altruistic industry. They are much better organized to promote the interests of the public than they are to promote the interests of themselves. Through the American Railway Association and other national and local organizations they are prepared to so distribute equipment and to promote the technical progress of the industry that the public is constantly being served with greater efficiency and economy. But the railways are not so organized as effectively to resist the attacks made upon them as an industry. They show much more interest in their competitive activities than in co-operation, when co-operation in dealing with the rate, wage, and other questions is what they need. They rely upon committees composed of officers of individual lines to represent them in many instances in matters affecting groups of railways or the railways as a whole and, in consequence, fail to be adequately represented because the members of the committees are primarily interested in the affairs of their own railways. They fail repeatedly to take concerted action regarding matters requiring such action because the officers of individual lines cannot agree upon the action that should be taken.

If the railways are ever to get as good treatment from the public as they are giving to the public they will have to struggle for it in a really organized way, and they will never do this until the officers of individual lines more fully recognize the fact that the prosperity of each railway is largely dependent upon conditions affecting the prosperity of the entire industry, and that it is as essential they should be organized to promote the prosperity of the industry as that they should conduct the individual properties with the greatest practicable public spirit, efficiency and economy.

## Subsidies and the Railways

**P**ROBABLY never in history were so many projects being proposed, or actually carried out by politicians for ruinous direct and indirect national regulation of the railways as at present.

The attempt to secure a valuation of their properties which, measured by heretofore accepted legal standards, would be confiscatory is being prompted in some extraordinary ways. Under our theory of government the judicial department should be free from pressure from the legislative department. The Senate, however, recently has passed a resolution asking the Supreme court to allow Donald R. Richberg, attorney for a radical organization seeking a low valuation, to intervene in the O'Fallon case. This practically amounts to an expression from the Senate in favor of a low valuation, and therefore in favor of direct regulation to restrict as narrowly as possible the net return the railways may earn. This action of the Senate in trying to influence the result of important litigation before the Supreme Court is, we believe, unprecedented in the history of the American government.

The railways are already being subjected to direct regulation which is preventing them, year after year, from earning a fair return, even on the basis of the low tentative valuation made by the Interstate Commerce Commission. They are also being subjected

to indirect regulation by competition subsidized by the national and state governments, or actually carried on by the government itself, and are threatened with large increases in these forms of competition. They have lost hundreds of millions of dollars in passenger earnings through the competition of motor vehicles operating on highways built at government expense. They are losing many millions of dollars of earnings through the competition of vessels operating via the Panama Canal, which was built at government expense. There is being advocated additional extensive development of inland waterways to take freight from them and carry it at a total cost in excess of what it costs to carry it by rail. The government itself owns and operates the barge system on the Mississippi and Warrior rivers, and the House Committee on Interstate and Foreign Commerce has reported favorably a bill to increase by ten million dollars the capitalization of the Inland Waterways Corporation to enable this government agency to compete more extensively with the railways and also to force the railways to enter into arrangements with it for the express purpose of depriving them of traffic.

### *Walsh Resolution Regarding Wheat Rates*

And now a resolution has been introduced in the Senate with the apparent purpose of putting pressure on the Interstate Commerce Commission in the interest of a reduction of rates on wheat which would compel the railways, especially those of western territory, to bear, in reduced earnings, some of the effects of the policy of the Dominion of Canada in dealing with its railways and their rates.

The resolution introduced in the Senate by Senator Walsh of Montana, directing the commission to furnish comparative information regarding freight rates on wheat in the United States and Canada should call public attention to the wide contrast between the policy of the Canadian government in virtually paying subsidies to the railways of that country that help them to stand their present rates on wheat, and the policy of the government of the United States in attempting to compel the railways of this country to subsidize the farmers at railroad expense, instead of at the expense of the general taxpayer.

In 1926 the taxes of the Canadian railways were only 2.18 per cent of their total earnings. In the same year the taxes of the railways of the western district of the United States were \$154,000,000, or 6.64 per cent of their total earnings, and the taxes of those of the entire country were 6.09 per cent of their total earnings. If the taxes of our western railways had been as small in proportion to their total earnings as were those of the Canadian railways they would have been \$104,500,000 less than they were. This would have been equivalent to a 20 per cent reduction in the rates charged by all the western lines not merely on wheat, but upon all the agricultural and animal products transported by them. The American politician forces the railways of this country to pay taxes more than three times as high in proportion as those of the Canadian railways, and then introduces resolutions inquiring why the railroads do not make lower rates.

But this is not the entire story. While the Canadian Pacific is owned and operated by a private company, the Canadian National System is owned and operated by the government. The average annual deficit reported by the Canadian National during the seven years ending with 1927 was \$2,240 per mile of road operated. In

other words, the rates it is allowed to charge are not high enough to pay its operating expenses, taxes and fixed charges, and its losses are paid by the taxpayers of Canada, including the farmers. An annual contribution from the government of the United States to the western lines in this country averaging \$2,240 per mile of road would amount to about \$300,000,000. If, in addition to this, our western railways were taxed only at the rate Canadian railways are, they could make a reduction of 80 per cent, or \$400,000,000 annually, in their rates on all products of agriculture and animals and animal products, and still have left as much net return as they are now earning.

It is significant that while Senator Walsh asks, in his resolution, for information regarding comparative wheat rates in Canada and the United States, he does not ask for any information regarding the differences between railway taxes in Canada and the United States, or suggest that the railways of this country should be given a subsidy from the federal treasury in order to enable them to make rates on wheat regardless of transportation costs as is done in Canada.

### *A Subsidy for Agriculture*

Senator Walsh's resolution seems to have the same objective as the Hoch-Smith resolution—namely, that of bringing about adjustments of rates on farm products which will subsidize the farming industry through freight rate-making, regardless of whether the resulting rates will be just and reasonable as measured by sound economic standards.

Does the agricultural industry of the United States need a subsidy? If so, certainly neither the railroads nor any other single industry should be called upon to pay it. It should be paid directly from the public treasury. If, however, the subsidy is to be given through freight rates the American public should be fair enough to compensate the railways by reducing their taxes, or even in more direct ways paying the losses caused them by the government's policy. But the view of many politicians seems to be that the government should subsidize waterway and highway competition with the railways at the expense of the taxpayers and at the same time compel the railways to subsidize the farmers at railroad expense even to the extent of making rates that will offset the railway policy of the Canadian government. The railways of the United States are to be victimized by the policy of both their own government and that of Canada.

As far as it relates to railway transportation, the statesmanship of the United States seems to have exhausted itself when the Transportation Act was drafted and passed. There has not been since then enough statesmanship in the government even to get the act carried out. There does not seem to be statesmanship enough now to recognize the fact that to regulate the railways in the various ways being proposed would not only be confiscatory but would make impossible the continued rendering of good and adequate railway service.

The public should congratulate itself upon the fact that there is more brains engaged in the management of railways than there is engaged in their regulation. Perhaps the ability devoted to transportation by railway managers will continue to serve as an effective antidote to the stupid and reckless imbecilities devoted to it by many influential public men, but it sometimes requires great optimism and confidence in railway managers to believe that this will always be the result.





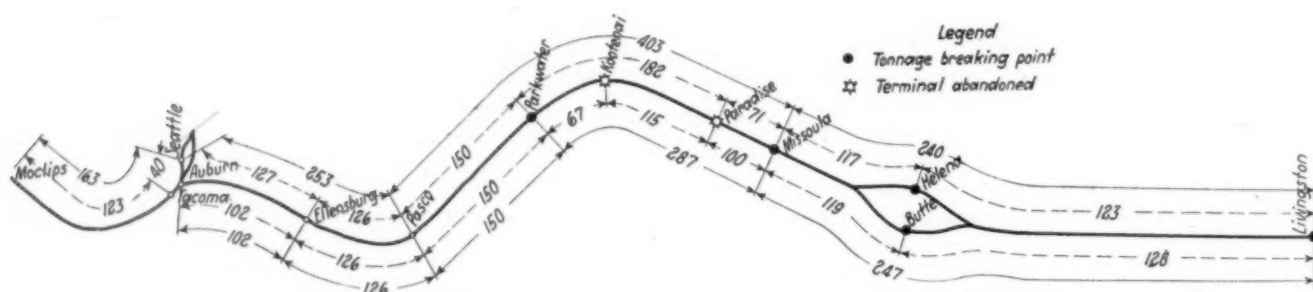
The Northern Pacific Uses 4-8-4 Locomotives in Main-Line Passenger Service

# Four Terminals Closed by Extending Locomotive Runs

*Northern Pacific effects saving of \$264,000 in terminal expense and \$128,000 in fuel annually*

As a result of extending locomotive runs, the Northern Pacific has been able to close four intermediate engine terminals, except for local switch engine service, resulting in a saving of \$264,000 per year in terminal expense alone. This does not include the reduction in forces effected at other terminals with their consequent savings. In addition, a saving of about

engines in main-line service over three engine districts and freight engines over two engine districts. This plan did not reach its ultimate development until November, 1927, when, upon the completion of the work of strengthening the Marent viaduct near Missoula, the 71-mile locomotive run between Missoula and Paradise was eliminated. The former and present passenger



Graphic Chart of the Past and Present Engine Runs—Livingston to Moclips

\$128,000 in coal has been made possible by eliminating the necessity of firing up engines at intermediate terminals, and through standby losses in connection there-

locomotive runs are shown on this page in Table 1.

Each passenger train formerly required 14 locomotives in each direction between St. Paul, Minn., and Seattle, Wash. They are now handled by six locomotives, or less than half the former number. The longest run is 403 miles between Missoula, Mont., and Pasco, Wash., and the shortest run is 240 miles—between Livingston and Missoula, Mont.

In addition to these extended runs in passenger service on the main line, long runs have been established on the secondary main line to Winnipeg, Man., where one engine now makes the run between Staples, Minn., and Winnipeg, 339 miles, instead of the former practice of using three engines; one from Staples to East Grand Forks, Minn., 176 miles; another from East Grand Forks to Pembina, N. D., 94 miles; and a third engine on a turn-around trip of 138 miles between Pembina and Winnipeg. The increased utilization of passenger power has made possible a wider distribution of the Mountain type passenger locomotives, with correspondingly greater operating efficiency.

Table 1.—Extended Passenger Engine Runs

Former	St. Paul-Jamestown	Present	Type of Locomotive
St. Paul-Dilworth	248 mi.	St. Paul-Jamestown	344 mi. *Q5-Q6
Dilworth-Jamestown	96	Jamestown-Glendive	323 A
Jamestown-Mandan	107		
Mandan-Dickinson	110		
Dickinson-Glendive	106		
Glendive-Billings	225	Glendive-Livingston	341 Q5-Q6
Billings-Livingston	116		
Livingston-Butte, Helena	123	Livingston-Missoula	240 A
Butte-Helena-Missoula	117		
Missoula-Paradise	71	Missoula-Pasco	403 Q5-Q6
Paradise-Parkwater	182		
Parkwater-Pasco	150		
Pasco-Ellensburg	126	Pasco-Seattle	253 Q5-Q6
Ellensburg-Seattle	127		

\* See Table 3 for locomotive description.

with, this figure being based on the cost of the coal used at the time the runs were extended.

The plan of extending locomotive runs was started in 1923. The general plan was to run the passenger



### Extended Freight Runs

Table 2 shows the former and present freight locomotive runs. It will be observed that a train now requires 11 engines between Northtown (the Twin Cities freight terminal) and Auburn, Wash., as against 17 formerly needed. The longest freight run is between Missoula, Mont., and Parkwater, Wash., 282.5 miles, which covers

Table 2.—Extended Freight Engine Runs

Former	127 mi.	Present	127 mi.
Northtown-Staples	105	Northtown-Staples	105
Staples-Dilworth	97	Staples-Dilworth	204
Dilworth-Jamestown	107	Mandan-Glendive	215
Jamestown-Mandan	109	Glendive-Laurel	239
Mandan-Dickinson	106	Laurel-Livingston	101
Dickinson-Glendive	124	Livingston-Missoula	251
Glendive-Forsyth	115	Missoula-Parkwater	282
Forsyth-Laurel	101	Parkwater-Pasco	149
Laurel-Livingston	132	Pasco-Ellensburg	125
Livingston-Butte, Helena	119	Ellensburg-Auburn	102
Butte, Helena-Missoula	100		
Missoula-Paradise	115		
Paradise-Kootenai	67		
Kootenai-Parkwater	149		
Parkwater-Pasco	125		
Pasco-Ellensburg	102		
Ellensburg-Auburn			

three former engine districts while the average main line freight engine run is now 173.3 miles, as compared with the previous average of 111.4 miles.

By extending the freight engine runs, the Northern Pacific has been able to obtain increased utilization of its 159 heavy Mikado locomotives, having a tractive effort of 63,460 lb.

With the runs extended, these Mikados cover much more of the main line than was formerly the case, with correspondingly greater train loads.

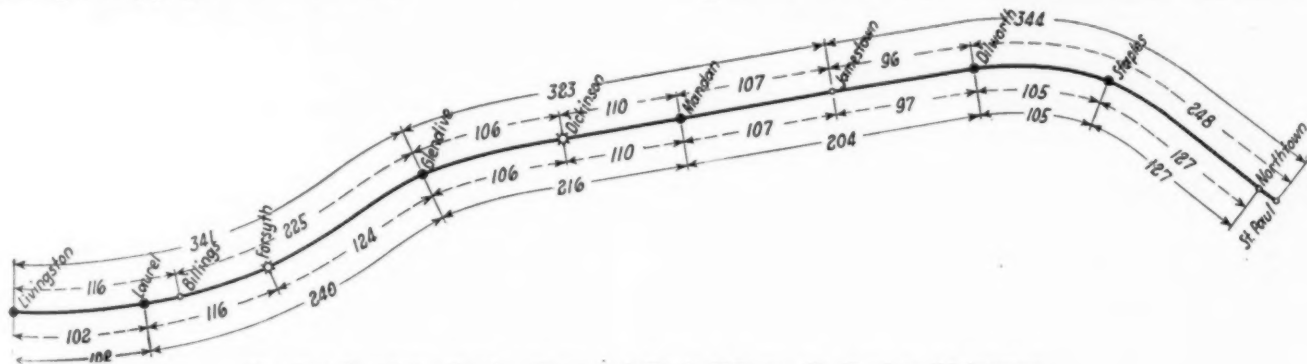
compared with 1926, and \$117,020 compared with 1925.

The diagram shows the location of the terminals that were closed. It also shows the tonnage breaking points at Staples, Minn., Dilworth, Mandan, N. D., Glendive,

Table 4.—Engine-house Labor Costs

	1927	1926	1925
Duluth	\$70,584.79	\$71,278.68	\$82,818.68
Mississippi St.	67,287.61	66,138.40	75,098.14
Northtown	51,502.14	51,640.67	55,791.13
Staples	51,891.71	50,258.01	52,131.85
E. Grand Forks	5,949.56	10,335.57	13,651.74
Dilworth	44,618.06	49,891.71	49,909.35
Jamestown	44,341.91	38,973.67	49,170.57
Mandan	55,793.46	60,337.06	59,022.44
Dickinson	18,383.33	16,958.47	20,621.73
Glendive	61,276.18	56,977.50	53,716.24
Forsyth	10,848.27	11,260.56	13,699.91
Billings	16,355.00	23,629.49	29,984.47
Laurel	32,074.00	41,580.82	42,532.13
Livingston	56,540.00	59,075.20	60,370.83
Bozeman	9,095.00	10,223.81	11,712.79
Butte	16,786.00	14,482.51	16,685.00
Helena	40,338.02	40,857.13	45,223.33
Missoula	56,695.52	56,314.93	60,825.58
Wallace	5,009.96	4,931.37	7,720.46
Paradise	11,763.69	16,593.79	25,181.80
Parkwater	45,508.78	48,871.80	59,681.11
Pasco	54,443.53	53,529.04	55,747.88
Ellensburg	31,287.83	31,984.39	31,742.29
Auburn	43,340.40	41,332.26	42,199.35
Easton	10,248.09	9,454.18	6,372.59
Lester	14,405.94	13,586.97	13,551.46
Seattle	41,360.40	39,606.52	37,182.94
Tacoma	44,670.37	46,446.94	50,119.82
Centralia	30,690.03	32,736.93	34,356.04
Hoquiam	11,863.21	12,565.55	13,151.54
Total	\$1,054,952.79	\$1,081,853.93	\$1,171,973.19

Mont., Laurel, Livingston, Helena, Missoula and Spokane, Wash., which affect all freight traffic, both eastbound and westbound. These points were the controlling factors in working out the plan of extended freight runs on the transcontinental line due to the differ-



The Details of the Engine Runs and Their Effects—St. Paul to Livingston

Table 3 gives in detail the principal dimensions of the passenger and freight engines used in the long-run service.

The comparative engine-house labor costs for the system for the years 1925, 1926 and 1927 are shown in Table 4 from which it will be observed that a saving in labor costs of \$90,119 was made in 1926, as compared with 1925, while 1927 shows a reduction of \$26,901 as

ence in grades encountered in the cross-country run of 1,904 miles. The runs have been co-ordinated with these tonnage-breaking points, so that the maximum utility is attained.

All of the locomotives are assigned to certain shops, and all necessary repairs are made to each locomotive at the shop to which it is assigned, as far as possible. Engine-house attention and inspection for safety

Table 3. Principal Dimensions of Engines Used in Long Runs

Class	Wheel Arrgt.	Tractive Effort	Grate Area Sq. Ft.	Total Sq. Ft. Heating Surface (Equiv.)	Wt. on Drivers	Wt. of Engine	Wt. of Eng. & Tender	Size of Cyls.
Passenger Service								
A	4-8-4	61600	115.0	7588.0	260,000	426,000	739,900	28x30
P-2	4-6-0	25600	30.8	2393.0	118,500	158,400	252,400	20x26
Q	4-6-2	31000	47.2	3056.0	132,600	205,000	328,400	22x26
Q-1	4-6-2	31000	43.5	3064.0	144,000	225,500	366,850	22x26
Q-4	4-6-2	34600	43.5	3061.3	147,000	238,500	383,800	24½x26
Q-5	4-6-2	41800	70.3	4811.0	194,000	314,000	512,200	26x28
Q-6	4-6-2	41800	70.3	4811.0	197,000	322,000	520,500	26x28
Freight Service								
W-2	2-8-2	50600	43.5	3715.0	211,600	260,300	452,100	25x30
W-3	2-8-2	63460	70.3	4860.0	247,000	337,000	551,000	28x30
W-5	2-8-2	63460	70.3	4860.0	251,200	343,400	545,700	28x30

are the only work done on the locomotives at the turn-around points. Under these circumstances, with the entire responsibility for the maintenance of any one locomotive chargeable to one master mechanic, a thorough check showed that the mileage run between shoppings has been unaffected by the increased utilization of the locomotives brought about by the extended engine runs.

A high mileage per engine failure, brought about by a high standard of maintenance, is probably the prime factor in the success attending these long engine runs. The excellent condition of the locomotives operating in this service has been effected by means of increased care in inspection and by the established practice on the Northern Pacific of making minor repairs promptly, before serious defects have an opportunity to develop and possibly cause engine failures.

One of the important items of passenger locomotive maintenance under extended engine runs is the question of lubrication. Realizing this, the Northern Pacific has paid special attention to this feature. All the passenger locomotives in this service are equipped with auxiliary oil reservoirs, known as transfer fillers. They are filled at the initial terminals and the oil is transferred hydrostatically to the main lubricator when needed, thus eliminating the process of stopping to fill the main lubricator manually while on the road. This was found to be unnecessary on freight engines, since the lubricators are refilled when the engine crews change.

Surveys made by the Northern Pacific indicate that running the locomotives greater distances has had practically no effect on the cost of repairs per mile. The real economies effected on this railway, as on other lines with long engine runs, are found in the saving of engine-house expenses at intermediate terminals, fuel economy and the more intensive use of the larger locomotives, resulting in greater tonnage per train.

## Waterway Bill Opposed

WASHINGTON, D. C.

**R**EPRESENTATIVE Schuyler Merritt, of Connecticut, has filed in the House a minority report opposing the Denison bill to increase the capitalization of the government Inland Waterways Corporation to enable it to expand its operations in a continued "experiment" to determine whether barge line transportation on the Mississippi river and its tributaries can be made profitable. He says the advocates of the bill are endeavoring "to bring about quickly a desirable result which, in the end, would be better accomplished, although more slowly, by a natural economic development." The majority report was filed last week. Mr. Merritt says in part:

An examination of the bill will show that it is a tremendous project, providing as it does for the operation of a barge line on the Mississippi River from New Orleans to St. Paul, on the Mississippi and Missouri from New Orleans to Sioux City and on the Warrior River to Birmingham, Ala., and on the Illinois River to Chicago.

The bill also looks forward to the extension of the service to all tributaries of the river, so that the project really is of enormous extent.

The bill provides that when proper facilities for navigation are provided and certain other requirements are satisfied that the property and business of the corporation may be sold under certain limitations. While this provision on its face seems to hold out a hope that the business will be transferred to private ownership, it will be found that in view of the conditions that must be complied with before the property is sold that the hope of its disposition to private parties is slight.

One of the witnesses who is familiar with all of the conditions testified that he thought the appropriation had better be fifteen millions rather than ten at the present time, and that

at the present rate of improvement it would be some 25 years before it could be turned over to private enterprise. He thought, however, that perhaps by adequate appropriations it might be reduced to 15 or 10 years; but who can doubt that, if the initial operations prove satisfactory to certain towns and cities along the banks of the river, irrespective of whether the operation is an economic success, there will be many demands upon Congress for increased appropriations to provide increased equipment that can not be resisted.

The result will be that at the end of even 10 or 15 years the investment will be so great that it is most unlikely that private parties will take it over. It may also be confidently predicted that inasmuch as this corporation will be operated by the United States there will be a constant pressure both on the corporation and on Congress to fix rates to suit the shippers without any regard to the value of the service or its cost. If this state of facts should obtain it would clearly be favoring a class of shippers at the expense of the country at large. One reason which is given by its advocates for this legislation is that the investment of the United States in the river is so great that it ought to be utilized. As an economic proposition it may be pointed out that this statement should have a condition attached to it, namely, that it should be utilized if it can be done profitably to the country at large. It has always been the practice of the United States to improve rivers and harbors for the purposes of navigation, and enormous sums have been spent all along the coast and on inland waterways for this purpose. But when these improvements have been made and navigation made possible it has been the universal practice to rely upon private initiative and private resources for conducting commerce on these waterways. There is no more reason for the United States operating barge lines upon the Mississippi River than there is for its operating barge lines on Long Island Sound or the Hudson River.

Another reason given by the advocates of this legislation is that in order to attract private capital the feasibility of profitable operation must be demonstrated. But it will be noted that the only tributary of the Mississippi to which this bill does not apply is the Ohio River, and the reason is that in consequence of the improvement already made upon that river a tremendous private operation is now going on, and it is certain that when it is completed a line of common carriers will be in operation on a large scale.

If this result has followed the improvement of the Ohio River it is a fair presumption that it will also follow on the Mississippi and other tributaries.

Considering this bill, with all its tendencies and implications, it would appear that its advocates are yielding to the temptation which has been so strong in other directions, namely, to endeavor to bring about quickly a desirable result which, in the end, would be better accomplished, although more slowly, by a natural economic development. The power of the United States is so great and so far-reaching that there is always a tendency to use this power to produce broad and important results, although it is generally agreed that these results should more properly be brought about either by the operation of the States themselves or, still better, by individuals or combinations of individuals. Unfortunately this tendency, when once yielded to, makes an added temptation to use the power of the United States in many other directions to the detriment of the independence and initiative both of States and individuals. It appears to the minority that this tendency should be resisted in this case to the ultimate advantage of the Nation and to all concerned.



Ewing Galloway

Great Southern (Ireland) Station at Portarlington



# Automatic Interlocking Saves 50 Stops a Day

*Chicago & Eastern Illinois installs plant at main line crossing—Over 100 per cent return on investment*

At the crossing of the single-track main line of the Chicago & Eastern Illinois with the branch line of the Illinois Central at Sullivan, Ind., 25 miles south of Terre Haute, the installation of an automatic interlocking plant with smashboards has eliminated the necessity of stopping approximately 50 trains a day. These new facilities cost \$11,600, of which amount about \$3,200 represents the investment required for the four smashboard mechanisms and associated control equipment. It is estimated that the elimination of approximately 18,000 train stops a year represents a conservative saving of \$12,000. The installation is thus expected to pay for itself in about a year.

Train operation on both railroads has been noticeably expedited since the automatic interlocker installation. Immediately east of the crossing there is a 1.75 per cent adverse grade westbound on the branch line of the Illinois Central. There is an adverse grade northbound of about 0.8 per cent approaching the crossing on the C. & E. I. Elimination of train stops at the crossing has speeded up train movements materially because of these adverse grades.

## Semaphore Type Home Signals and Smashboards

Briefly the protection consists of automatic semaphore home signals so controlled through track circuits and interlocked that a train approaching the crossing on one road causes the home signal for that movement to change from the "stop" to the "proceed" indication, provided that no train is approaching the crossing, either from the opposite direction or on the crossing line. The train then moves over the crossing on the authority of the "proceed" indication of its home signal without making a stop. All this operation is automatic; no manual attendance is necessary. On each road the home signal conforms to the standard two-arm interlocking signal. On the C. & E. I. the home signal top arm is a three-position upper-quadrant semaphore and in addition to governing movements over the crossing is connected into the regular automatic block signal system. The lower arm is fixed and is used only as a marker. This is the C. & E. I. standard signal arrangement for interlocking plants where there are no diverging routes.

## Electrically-Operated Smashboards

The I. C. home signal is slightly different, owing to the fact that the top arm is fixed and the bottom arm is a two-position, upper-quadrant semaphore, operating from 0 to 45 deg. This is the I. C. standard slow-speed home signal for interlockers. The night indication of these home signals is obtained from electrically-lighted lamps. The distant signals on the C. & E. I. are the regular auto-



Home Signal for Sullivan Automatic Interlocker—Insert Shows Time Release at the Crossing

matic block signals, while on the Illinois Central two fixed distant signals are used.

Each home signal is equipped with an electric smashboard mechanism, the smashboard arm extending 12 ft. above the right-hand rail. When horizontal, the smashboard is close enough to the track so that an engine moving past the signal will strike and break the arm. When the smashboard is in the vertical or clear position, however, an engine can pass the signal without striking the board. The smashboards were required by the Indiana Public Service Commission so as to provide a means of identifying a train if it moved past a home signal in the "stop" position in violation of the prescribed rule. The home signal arms are normally in the "stop" position on both roads, and the smashboard arms are in the horizontal or "smash" position.

## Normal Operation of Plant

The operation may be understood by following a train movement through the plant from the point where it enters an approach section. Assume a southbound C. & E. I. train is approaching the plant. Also assume there is no C. & E. I. train in the southbound home signal block and no train in the approach or home sections on the I. C. When the southbound train enters the approach section, both C. & E. I. smashboards automatically operate to the vertical or "clear" position, and the southbound home signal 1 changes to proceed. The train may then proceed through the plant and over the crossing without making a stop. The southbound home signal goes to stop position as the engine passes it, and both smashboards go to the horizontal or "smash" position, when the rear of the train passes the northbound home signal.



This automatically releases the plant for use of other trains which may approach the plant on either the C. & E. I. or I. C.

However, if after the rear of the train has passed the northbound home signal 2 and the southbound home signal 1 and the smashboards have returned to normal position, the train is stopped in the approach section south of the plant and is then to be moved back through the plant, a trainman must unlock the push button box at the home signal and operate the button. If the other three approach sections and the two home sections are still unoccupied, the operation of the push button will



Track and Signal Plan of Automatic Interlocking Plant on the C. & E. I. at Sullivan, Ind.

cause both C. & E. I. smashboards to go to the "clear" position and the northward home signal 2 to go to the "proceed" position. The train may then move back through the plant. It must be understood that while a home signal is in the proceed position, or a smashboard is in the "clear" position on one line, the home signals on the other line are automatically held in the "stop" position and their smashboards in the horizontal or "smash" position.

The operation of the other usual movements through the plant on both C. & E. I. and I. C. is similar to the typical movement just described in which the C. & E. I. southbound train was used as an example.

#### How Switching Movements Are Handled

Assume that a southbound C. & E. I. train enters the approach section intending to use the east or west interchange track. When the train enters the approach section, the smashboards on the C. & E. I. operate to the clear position, and this is followed by the movement of the southbound home signal 1 to the proceed position. Assume that the train stops short of the switch to move into the west interchange track. Reversal of the switch will set the southward home signal at stop, and, after a time interval of about one minute, the two smashboards on the C. & E. I. will return to the "smash" position and will remain in this position as long as the train occupies the approach section, or one of the interchange track switches is reversed.

Operation of the plant for any approaching I. C. train will then be the same as if the C. & E. I. section were unoccupied and no switching movements were being made.

This arrangement greatly facilitates the movement of traffic, because switching on the interchange tracks does not tie up the plant. When the train is through switching, and the interchange switches are again set for main-track movement, the plant is restored automatically to normal if the train moves north out of the approach section. However, if the train after completion of switching operations moves south, it is necessary for the trainman to operate the push button at the southbound home signal to clear the two C. & E. I. smashboards and southbound home signal.

#### Northbound Switching Moves

Assume that a northbound C. & E. I. train has the two smashboards in the clear position and the northbound home signal 2 at proceed, but stops just south of the northbound signal and the engine cuts off, moving north with the head end. The balance of the train is left in the approach section south of the plant. After moving north through the plant, the head end of the train may pick up or set out any cars on the two interchange tracks, and when this work is completed and switches set normal, the C. & E. I. smashboards will again operate to clear position and the head end of the train may then move south and pick up the rest of the train. This assumes that no I. C. train has entered an approach section. When the rear end of the train is picked up, the smashboards return to horizontal position, and it is necessary that a trainman operate the push button at the northbound home signal 2 before the C. & E. I. smashboards will again clear and the northbound home signal change to proceed.

During the interval that the engine and head end of the train are switching north of the crossing and occupying both approach sections with interchange switches normal, an I. C. train cannot use the plant except by operating the time release at the crossing. Operation of the release, after a time period of one minute, will put the C. & E. I. smashboards at stop and then clear the two smashboards on the I. C. and the desired signal, but when the movement is completed, the two I. C. smashboards will return to the "stop" position and the two C. & E. I. smashboards will automatically go to "clear" position because the rear end of the C. & E. I. train is still occupying the approach section south of the northbound home signal.

#### Control of Backup Movements

If a train enters the approach section, thus setting the smashboards for that route in the "clear" position and the home signal at "proceed," and then enters the home section, that is, the track section between home signals, and then stops and backs out without completing the movement through the plant, the signal and smashboards will return to their normal positions. If the train is then to be moved through the plant, without first backing entirely out of the approach section, it is necessary for a trainman to operate the push button at the home signal in order to clear the smashboard and home signal. This movement is frequently made by I. C. westward freight trains when setting cars into the east interchange track.

Assume an eastward I. C. train desires to use the east interchange track. The engine leaves the rear of the train west of the approach section, then moves east through the plant. When the engine and cars have passed the westward home signal 3, the I. C. smashboards and home signal return to their normal positions, because the rear end of the train is not in the approach

section on the I.C. After completing work in the east interchange track, it will be necessary for a trainman to operate the push button at the westward home signal 3 in order to set the I. C. smashboards in the "clear" position and home signal 3 at proceed, so that the engine may move west through the plant and couple on to the train. However, if in using the east interchange track, the engine and cars move far enough into that track to clear the approach section, the I. C. smashboards will automatically operate to the "clear" position and the westward home signal to the "proceed" position when the engine and cars again move out on to the main track.

There are two clockwork time releases at the crossing, one for each road, and operation of one or the other of these releases will, in every case, accomplish the same result as operation of the push button for the particular switching operations described in the foregoing. They provide also for releasing the plant in case of approach track circuit trouble or if a train is standing in an approach section.

In case of a total electrical failure, it is possible to clear the smashboard by manipulation of a crank which fits to the smashboard mechanism. The smashboard operating mechanism is in many respects similar to a signal mechanism, the only difference being in the provision made for cranking the smashboard to the clear position. A feature of the smashboard mechanism is the mechanical lock which prevents a trainman from pushing the arm clear while standing on an engine. The smashboard arm can only be cleared in an emergency by operating the crank.

## Power for Electric Traction

**I**N the *Railway Age* of May 12, 1928, under the title "Power For Electric Traction" there appeared an abstract of a number of papers on this subject which were presented at a regional meeting of the American Institute of Electrical Engineers at New Haven, Conn., on May 10. Discussion of these papers brought out additional information of value, the part of the discussion of greatest interest to railroad men being that provided by Sidney Withington, electrical engineer, New York, New Haven & Hartford. Mr. Withington's discussion follows:

### Importance of Reliability

The question of power supply for railroad electrification is one not only of economy, but of reliability. These two important considerations do not necessarily go hand in hand; in fact, it often happens that a balance or compromise between them is necessary. For instance, it may be more economical to develop a single central supply of power for a given electrification project than to provide several sources of feed, but a single supply may mean that power transmission facilities must be installed along the railroad right-of-way in close proximity to the tracks, with consequent danger of interruption on account of derailments. The right-of-way furthermore, often passes through thickly settled communities where the clearance is restricted and where danger of trouble from a possible fire on adjacent property is considerable. Any hazard which results in cutting the power line in two, obviously is going to be serious if it results in a complete prostration of service beyond the break.

As an alternative to a single point of supply there may be considered a main central feed to serve as a "back bone," with supply points of relatively less capacity near either end of the electrified zone, so arranged that in the event of a failure of the main supply or a break in the transmission facilities the auxiliary sources may carry at least a portion of the load and thus take care of the most important service until normal conditions are resumed. Such an arrangement obviously costs somewhat more than a complete concentration, but the resulting increase in reliability is often worth the added cost in an important electrification project.

A third possibility which may sometimes be practicable is the tying at various points to a single large power system with a transmission network entirely independent of the right-of-way of the railroad. Such a system is often fed from two or more independent power plants or interconnected with other power systems. In an arrangement of this kind any single interruption of power or transmission would normally not seriously affect railroad operation. If conditions are favorable, such an arrangement is from many points of view quite ideal, for it allows advantage to be taken of the maximum railroad load factor with consequent minimum cost, and at the same time obviously produces maximum reliability. The choice of power supply in any given instance obviously depends upon local conditions and facilities readily available.

Although in some instances a generated frequency of 25 cycles is available commercially which makes possible a tie directly into the railroad traction feeders, the power available from a large commercial system, is usually 60 cycle three-phase, and is thus often not adapted for supply direct, without modification, for heavy electric traction; and therefore, regardless of the system of electrification some form of conversion apparatus is generally necessary if power is purchased. If a railroad produces its own power the characteristics of the power supply of course, are correlated with those of the system adopted.

The two electrification systems of power distribution most often employed in this country are (1) alternating current single phase at 25 cycles and 11,000 volts and (2) direct current, operated at various voltages from 600 to 3000. To adapt three phase 60-cycle power from a commercial 60-cycle supply to either of these systems requires some form of substation apparatus, which in the case of direct current may be mercury arc rectifiers, motor-generators, or rotary converters, and in the case of single phase, takes the form of motor-generator frequency changers.

Other things being equal, the purchase of power by a railroad for traction purposes should be more satisfactory than the operation by the railroad of its own plant. The capital requirements for railroad electrification are necessarily very high at best. The cost of power distribution facilities required to convey power to the collecting devices of the motive power units runs into many thousands of dollars for each mile of track electrified. The acquiring of locomotives or cars on an equipment trust allows postponement to some extent of a portion of the immediate capital requirements, but the purchase of power will eliminate the relatively large capital which would be necessary for its own power plant installation.

It is, however, necessary that power companies which are interested in supplying power for railroad electrification shall consider all the aspects of the questions, such as diversity of load compared with other customers (for much of the railroad load, especially freight, occurs during the night), and the volume of business involved.

With growing efficiency of power plant apparatus made possible, especially by concentration in large units, it is logical to expect that the production of power by organizations specializing in such productions would be more economical than production by railroads themselves, provided, however, that such economies are not obtained at the expense of too high investment charges, such that the consumer does not have the benefit. It should be borne in mind, in this connection, also that railroads are often in a position to purchase coal more advantageously than power companies.

Railroads do not as a rule pay as high a rate of interest on capital investment as do power companies, and this should be taken into account in determining the demand or primary charge which represents the cost of the money invested in plant and associated facilities. If a railroad installs its own plant, it may justly contemplate calling upon its reserve capacity for such possible emergencies as may sometimes occur in the course of its operation; and a power company in taking on a railroad power supply should be prepared to carry the load during abnormal conditions over which the railroad often has no control, without subjecting the railroad to penalty in establishing demands. Most of the important agreements for power for railroad traction purposes now recognize this important point, to the mutual advantage of all concerned.

The early New Haven electrification, inaugurated in 1906, was originally supplied from a railroad-owned power plant located at Cos Cob, Conn., which is not far from the center of the system load between New York and New Haven. Commercial power at that time was not available. The Cos Cob plant, with a capacity of about 13,000 kw. served the initial installation between New York and Stamford. In 1912, the plant was enlarged to about 32,000 kw. capacity to carry the New York, Westchester & Boston and the Harlem River branch freight traffic and the electrification through to New Haven which was inaugurated in 1914.

In 1915 there was added to the power system a supply from the United Electric Light & Power Company at West Farms, N. Y., the power being generated at the Sherman Creek power



plant of that company. This connection is supplied from turbo-generators used exclusively for railroad service, and although the power company's machines share with Cos Cob, the power swings, nevertheless, with proper supervision considerable accuracy in the control of load and consequent supply of energy is possible.

With the growing load on the New Haven, the question of a power supply at the east end of the electric zone was considered. The alternatives were (1) concentration at Cos Cob with independent high voltage transmission and step-down substation at the east end of the zone, and (2) entirely independent supply at the east end, somewhat analogous to the West Farms supply. The result was a decision in favor of independent supply and the installation at Devon, Conn., of two 5000 kw. (continuous) frequency changers for the purchase of power from the Connecticut Light & Power Company and at New Haven of one machine of similar capacity for interchange in either direction of surplus power with the Connecticut Company. These facilities automatically allow continuous or definite control of load as desired, regardless of voltages or relative variations of voltage loads or frequency in any of the systems involved. An extension of the New Haven System over the New York Connecting Railroad and on the Long Island Railroad to Bay Ridge, New York, made desirable a connection with the Pennsylvania Railroad power system at East New York which could be used in emergency. A motor-generator similar to that at New Haven was installed at that point. The motor-generator, as well as all of the other apparatus of that type, is available as a synchronous condenser to maintain a favorable power factor. There are thus now in service on the New Haven System, five points of supply: East New York, West Farms, Cos Cob, Devon and New Haven.

There is no doubt that the concentration of power at Cos Cob would have been more economical than the policy of decentralization which has been adopted, but the consideration of reliability justifies the extra expense. While Cos Cob is the main source of supply, the auxiliary sources are of sufficient capacity in the event of an emergency to provide the continuance of at least the most important traffic, and it is our opinion that there is a satisfactory balance between the two important considerations, economy and reliability.

#### Power Contracts

Concerning contracts for the purchase of power from utility companies, E. R. Hill, of Gibbs & Hill, consulting engineers, New York, commended particularly the energy clause feature of the Illinois Central power contract. He also described briefly the contract for the purchase of power which the Pennsylvania has made with the Philadelphia Electric Company. An outstanding feature of this contract, he said, is that charges or rates are based on the cost producing, transforming and distributing power; the railroad being protected from excess production costs by being guaranteed a limit to production costs.

G. I. Wright, engineer of electric traction, Reading Company, spoke of electric traction and power contracts as related to suburban railroad service. He stated that suburban traffic, which in general is not attractive to railroads, is increasing, while passenger business in general is falling off. Suburban traffic, he said, is a low load factor business of the order of 25 per cent making investment costs high. Power company rates, he pointed out, provide a return which is commensurate with service rendered and this factor is responsible for the success of power companies. This, he said, is not true in the case of railroad suburban passenger business, in which a maximum of service is rendered for a minimum cost. He concluded by saying that railroads have not done as much to correct this situation as power companies have, but that electrification offers an opportunity to rectify some of the difficulty because it permits the running of short trains in mid-day periods and is otherwise extremely flexible.

H. C. Sutton, electrical engineer, United Gas Improvement Company, Philadelphia, Pa., said that a railroad-built power plant would probably be out of date in ten years because of the rapid developments being made in the power industry. On the other hand, he

said that power company load increases so rapidly that the utility company plants must be continually expanded and in this way it is possible to keep them up-to-date.

P. H. Hatch, assistant engineer, New York, New Haven & Hartford, stated that students of electric traction should give proper consideration to locomotives and cars operated by internal combustion engines. He also said that if 60-cycle power becomes standard, some of the advantages of alternating current traction disappear.

Two papers were presented on the subject of frequency changers and several engineers took part in the discussion primarily for making clear the manner in which variable ratio frequency changers operate. H. F. Brown, assistant electrical engineer, New York, New Haven & Hartford, showed how by means of variable-ratio frequency changers, a railroad can receive power without having disturbances on railroad circuits having any material effect on the power supply circuits and can at the same time control power factor.

#### Mercury Arc Rectifiers

Two papers were presented on the subject of mercury-arc rectifiers and these were discussed by representatives of railways, telephone and telegraph companies and electrical manufacturers. The greater part of this discussion concerned inductive interference caused by converters and methods for correcting it. By means of oscillograph records, Professor Wesley B. Hall, Yale University, showed very clearly how this interference is caused. He also described apparatus which has been installed to reduce interference and suggested other ways and means of further disposing of it.

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Wide World

Captain H. A. Cunningham, Left, Commander of the S. S. "Leviathan" Who Was Guest of John Draney, Right, Engineman of the Lackawanna Limited, on a Recent Run from Hoboken, N. J., to Scranton, Pa.



# Fuel Men Look into the Future

*Chicago convention sees further intensive fuel saving efforts and more complete departmental co-operation as desirable objectives*

**R**AILWAY fuel records, particularly in the last few years, indicate that the "cream has largely been skimmed," from opportunities for general fuel saving, according to several prominent speakers at the Twentieth annual convention of the International Railway Fuel Association, held at the Hotel Sherman, Chicago, May 8-11, inclusive, and reported in part in last week's issue. Two outstanding opinions, expressed time and again, however, were these: That still further intensive efforts at fuel saving are essential and that maximum results in fuel economy cannot be secured without the complete and hearty co-operation of the men in all departments of railway service. It was also pointed out that fuel economy may not always be synonymous with general operating economy, and that the conscientious fuel man will invariably place the good of the railway as a whole above that of his particular department.

Large attendance and keen interest were manifest throughout the entire four-day convention. With a total registration of 1,233 members of the fuel and of the supply associations, the attendance at most of the sessions was between 800 and 900 members. The operating session on Wednesday morning, May 9, was opened by Col. F. W. Green, vice-president of the St. Louis Southwestern, who outlined the departmental organization of railways, explaining particularly how the engineering, mechanical and transportation departments can operate individually and collectively to save fuel.

The "Influence of Commodities on Fuel" was discussed by Dr. J. H. Parmelee, director of the Bureau of Railway Economics. K. F. Nystrom, superintendent of the car department of the Chicago, Milwaukee, St. Paul & Pacific, presented a paper on "Roller Bearings in Relation to Fuel Economy." The report of the Committee on Fuel Bulletins was also presented at this session.

The afternoon session, on May 9, was devoted to reading and discussion of the report of the Committee on Locomotive Firing Practice.

The mechanical session, held during the morning and afternoon of Thursday, May 10, was opened by W. L. Bean, mechanical manager of the New York, New Haven and Hartford, who called attention to the intimate relation between low unit fuel consumption and general operating efficiency. Mr. Bean urged strongly the need, not only of modern locomotives equipped with the best fuel-saving and efficiency-increasing devices, but of engine crews who know how to operate this power. He said that fuel economy is no longer considered solely a mechanical department matter but one in which the best results can be accomplished only through the co-operation of all concerned. The "Possibilities of Future Locomotive Design" were presented in a paper by W. E. Woodard, vice-president of the Lima Locomotive Works. The "Locomotive of Today and of the Future as a Factor in Fuel Economy" was discussed by A. W. Bruce, designing engineer of American Locomotive Company. An ab-

stract of this paper appears under a separate heading elsewhere in this issue. Lawford H. Fry, metallurgical engineer of the Standard Steel Works Company, outlined simply and concisely the fundamental principles of combustion in locomotive boilers, the application of which are absolutely essential to efficient locomotive operation. A. G. Pack, chief inspector of the Bureau of Locomotive Inspection, pointed out the relation between fuel economy and locomotive condition, saying that the establishment of high standards of maintenance accomplishes the double object of saving fuel and increasing the safety and reliability of operation. Two committee reports were presented on "New Locomotive Economy Devices" and "Front Ends, Grates and Ash Pans."

The fuel supply session held on Friday, May 11, was notable for an address by E. L. Mahan, president of the National Coal Association, and by three committee reports on "Fuel Stations", "Accounting, Distribution and Statistics" and "Inspection, Preparation and Analysis of Fuel".

## Election of Officers

At the final business session on Friday, the following officers were elected to carry on the work of the association during the coming year: President, T. C. Hudson, assistant general superintendent of motive power, Canadian National, Toronto, Ont.; vice-president, C. H. Dyson, fuel agent, Baltimore & Ohio, Baltimore, Md.; vice-president, W. J. Tapp, fuel supervisor, Denver & Rio Grande Western, Denver, Col.; and vice-president W. G. Black, mechanical assistant to the president of the Erie. L. G. Plant, Railway Engineering Equipment Company, Chicago, was re-elected secretary-treasurer.

Three new members were elected to the executive committee, which now consists of the following: J. E. Davenport, (N. Y. C.), Weehawken, N. J.; J. D. Clark, (C. & O.), Richmond, Va.; J. W. Dodge, (I. C.) Forest Hill, Tenn.; C. I. Evans, (M. K. T.), Parsons, Kan.; H. Morris, (C. of N. J.), New York; J. M. Nicholson, (Sante Fe), Topeka, Kan.; C. Roberts, (Penna.), West Philadelphia, Penna.; C. T. Winkless, (Rock Island), Chicago; C. P. Dampman (Reading), Philadelphia, Penna.; R. F. Twogood (S. P.), San Francisco, Cal.; L. E. Dix (T. & P.), Dallas, Texas.

## Economic Aspects of Fuel Conservation

By J. H. Parmelee

Director, Bureau of Railway Economics

Fuel consumption statistics, computed on a gross tonnage that includes the weight of locomotive and tender, are available in summarized form since January 1, 1921. Even this short period of seven years, or from the beginning of 1921 to the end of 1927, has been full of development and progress.

### Seven Year Achievement

In 1921, the average amount of locomotive fuel consumed in freight service per 1,000 gross ton-miles (in-

cluding locomotive and tender) was 162 lb. With the exception of a slight rise in 1922, each year from 1921 to 1927 showed a reduction in fuel consumption, the number of pounds of fuel per 1,000 g. t. m. dropping steadily from a maximum of 163 lb. in 1922 to a minimum of 131 lb. in 1927. This was a reduction in six years of 31 lb., or 19.1 per cent.

The year 1927 made a very satisfactory showing in this respect. The average consumption, which stood at 137 lb. per 1,000 g. t. m. in 1926, fell to 131 lb. in 1927. This reduction of six pounds was equivalent to 4.4 per cent, which greatly exceeded the relative reduction of 1926, and slightly exceeded the average annual reduction of the previous five years.

Turning to the passenger service, we find also an excellent record. As in the case of the freight service, there was a slight increase of passenger service fuel consumption in 1922, while another small increase occurred in 1923. From that date down to 1927, there was a consistent reduction year by year. The net reduction during the six-year period from 1921 to 1927 amounted to 2.3 lb. of fuel per car mile, or 13 per cent. The reduction in 1927 alone was equivalent to 2.5 per cent, which was greater than during the next preceding year, and also slightly exceeded the average annual reduction of the previous five years.

In this connection it is well to keep in mind that a ton is a fairly standard and uniform measure, while a car is not. When we refer to fuel consumption in the freight service per 1,000 ton-miles, we are using the same basic measure in the different years. When we speak of consumption in the passenger service per car-mile, however, we are utilizing a unit of measure—the passenger car—which may and does vary considerably in weight and character from year to year. This is indicated by the fact that the average gross weight per passenger car-mile increased from 64.8 tons in 1921 to 72.1 tons in 1927, or 11.3 per cent. Even between 1926 and 1927 the gross weight per passenger car-mile increased nearly one ton.

This makes the fuel achievement in the passenger service much more striking than appears from the fuel statistics, and places it on a basis closely corresponding to the sterling accomplishment attained in the freight service.

Thus the fuel consumption statistics for 1927 show record-breaking achievements in both the freight and passenger service, and mark another step forward in the long series of progressive improvements in the purchase, distribution, utilization, and conservation of railway locomotive fuel.

#### What of the Future?

So much for the achievement of the past seven years in fuel performance, the last two years, the year 1927 only. What of the future? Can you continue this progressive improvement in utilization, or are you nearing a minimum point of consumption that can no longer be reduced?

These are vital questions, and I do not venture to suggest the appropriate answers. In fact, no one but a prophet could make any reply with assurance. Yet a few general comments may serve to throw some light on the problem.

In the first place, the slang phrase that "the first hundred years are the hardest" would not seem to apply in the field of fuel consumption. On the contrary, the "first hundred years" may have been the easiest, and each additional year will probably become progressively

harder. In other words, the first steps in a campaign of conservation are usually the most fruitful of results. Each succeeding step becomes more difficult, and tends to produce smaller returns per unit of effort, until an irreducible minimum is reached.

Some railways may have made such progress during the past seven years as to find it impracticable to continue that progress at the same rate in the future. Other railways can possibly accelerate their improvement. The field is open to every fuel organization according to its own past record of accomplishment.

In the second place, psychology teaches us that any sustained effort is hard to maintain. You are racing against a number of obstacles, both physical and psychological, and at this stage of the race the psychological difficulties may easily predominate. Sustained interest and effort are vital, however, if the race is to continue.

It does not follow that no progress can be made in the future. I find that even this year to date you have made some improvement over 1927; the returns for the first two months of 1928 show a reduction of 3.4 per cent in fuel consumption per 1,000 g. t. m. in the freight service.

Again, wide variations in fuel performance occur as among railroads, which indicates that room for improvement exists on some lines, and that any such improvement will help the general average. Furthermore, the science of combustion engineering has by no means reached its zenith. Finally, I do not believe any member of this association has the remotest idea of quitting the conservation campaign, but proposes to see the race through.

These factors all lead to a forward look in the matter of future fuel performance on the railways.

Many items enter into the fuel consumption problem, and no one factor is usually controlling. Some of these factors depend on the altitude, and the kind and height of mountain ranges to be traversed. Heavy grades, especially when they run against the loaded traffic, require much double-heading and a consequently high rate of fuel consumption. Even when double-heading is not resorted to, it is clear that the length and extent of grades, curvatures, and similar physical characteristics play an important part.

Other factors relate to the character of the traffic, its density, and its composition.

Still others relate to the kind of fuel available. Some railroads find it necessary to utilize much lower grades of fuel than others, because of their position with respect to accessible coal mines, and they necessarily report a higher rate of consumption than carriers more advantageously located.

The extent to which certain mechanical appliances have been installed together with the types and physical condition of locomotives and of cars, may also be considered. There are many other operating conditions that enter into the problem, and have their greater or lesser influence on the fuel question.

All these physical factors have a place in the field of relative fuel performance. There is a most important human factor as well, the result of which is the relative effectiveness of management in the direct handling and utilization of the fuel. In brief, this whole problem consists of the application of human brains and enthusiasm to certain known physical factors and conditions.

#### Effect of Traffic Density

It has already been suggested that traffic density has some bearing on fuel consumption. This density may



be measured in terms of gross ton-miles per mile of main track per day.

If traffic density were a controlling factor, the fuel consumption would decline as the density increased. This was not always the case in 1927, as between the several regions. True, the Pocahontas Region reports the greatest density and the lowest consumption. At the other extreme, however, the Southern Region reports the highest consumption, but stands third from the bottom in density. The Central Eastern Region, second highest in density, might be expected to be second lowest in fuel consumption; instead it stands second highest in consumption.

We are again forced to take refuge in the statement, that no one factor seems to be controlling in this matter of fuel consumption, and that the relative effect of the several factors that are concurrently at work is extremely difficult to segregate and discover.

#### Character of Traffic and Service

Trainloads of heavy commodities can usually be handled with a smaller number of fuel units per unit of weight than other types of commodity. Not only the density of traffic, but also the character and composition of the traffic, must be considered. In addition, the extent to which traffic is loaded in both directions is a significant factor. Another element is the fact that some lines originate the greater proportion of their traffic, and are subjected to switching and other handling requirements that increase the demand on the coal pile; other railways are more nearly bridge lines, with fewer obligations as to yard and classification handling; still other railways are principally terminal roads. These differences play their role in the field of fuel utilization.

Unfortunately, it is impracticable to make so complete an analysis of the traffic of each railway as to furnish satisfactory evidence regarding its effect on fuel consumption. Furthermore, such an analysis would only deal with one of the many elements that enter into this highly complicated problem.

Much emphasis is laid today on the character of service rendered by the railways. This service, adequate and prompt as to delivery of goods, frequently calls for a greater consumption of fuel than a slower service might require. So-called "expedited" and schedule services benefit the shipper, the manufacturer, and the merchant, and enable him to conduct his affairs with smaller stocks and lower costs, but the same service may and usually does cost the railway more. The effect on fuel consumption is clear; but it is the price of good service, and seems inescapable.

#### Relation of Fuel Consumption to Operating Efficiency

While fuel performance has shown improvement during the past seven years, that improvement has gone hand in hand with many other progressive steps in railroad operation. Some of these have been of assistance to the fuel conservation campaign, directly or indirectly, and they should receive due consideration.

Briefly summarized, this operating progress has shown itself in increased train speed, greater number of freight car miles per day, improved physical condition of locomotives and cars, greatly increased train load, and the highly significant factor of more gross ton-miles per freight train hour. This last factor showed an increase of 33 per cent between 1921 and 1927. Clearly if average train speed can be increased by reducing delays enroute, the effect on fuel consumption will be appreciable. These delays have been reduced not only by better operating methods, but also by im-

proved physical condition of locomotives and cars, with fewer engine failures, pulling out of draw bars, and the like. The increase in train load alone has had its undoubted effect. All these elements in progress have worked together, in a co-operative and co-ordinated way, to assist the fuel conservation engineer. I know no better example of the close relationship between the work of the executive, mechanical, and operating departments, which has affected them all in the right direction, and for which all can take their share of credit.

### Principles of Combustion

The subject of combustion in locomotive boilers was presented by Lawford H. Fry, metallurgical engineer of the Standard Steel Works Company, who described the principles governing combustion and said that the three essentials are: (1) ample air supply, (2) thorough contact between fuel and air at high temperature, and (3) minimum amount of fuel swept away by the draft. He emphasized the need not only of ample grate area but of adequate firebox volume in order to make possible the attainment of the last two essentials. Regarding grate dimensions and design as influenced by the kind and size of coal to be fired, Mr. Fry said:

"With large-lump, coking, bituminous coal the main thing is to provide a grate and ample air openings. A heavy fire can be carried because the large lumps provide air spaces through the fire, and too much air can be guarded against by increasing the depth of fire until it gives the desired resistance to the entrance of the air. If the same coal is reduced to smaller sizes by being passed through a stoker crusher, the conditions are changed materially. With the smaller coal, the air passages through the fire for a given depth are less. Therefore, to admit the same amount of air a lighter fire must be carried. The lighter fire is more easily broken up by the air current. If it gets thin at one point there is a tendency for the air flow to concentrate at that point and to tear a hole in the fire. It is, therefore, desirable in stoker firing to have sufficient grate area and to use a design of grate which will tend to prevent an excessive rush of air through any one small portion of it. Again with lignite, which is a light very easily lifted fuel, a large grate area is necessary so that the rate of air flow per square foot of grate is kept low."

Mr. Fry also maintained that accurate measurement, essential to all engineering progress, has been quite inadequate as related to combustion in locomotive boilers. He said:

"It is of course usual to measure the amount of steam produced per pound of coal fired, but this measures the overall boiler efficiency and not the efficiency of combustion. What is needed is to make a comparison between the amount of fuel effectively burned and the amount of fuel fired. To do this directly is practically impossible but an indirect method has been developed which gives reliable results and is not difficult to apply. The measurements necessary cover the amount of fuel fired, the amount and quality of steam produced, the temperature of the smokebox gases and the analysis of these gases. The analysis gives the weight of gas produced for each pound of fuel actually burned. It must be remembered that there is a difference between the amount of fuel fired and the amount actually burned.

"The temperature and the weight of the smokebox gases show how much heat is lost to the boiler per pound of fuel actually burned. This deducted from the heating value of the coal gives the amount of heat

taken up by the boiler per pound of fuel burned. Now the amount and quality of the steam and the amount of fuel fired gives the heat taken up by the boiler per pound of fuel fired. Then knowing the heat taken up per pound of fuel fired and the heat taken up per pound actually burned we know the proportion between fuel fired and fuel actually burned, that is the efficiency of combustion. For example, if the heat taken up is 80 per cent of the heat in the fuel burned and 60 per cent of that in the fuel fired it follows that fuel fired is to fuel burned as 80 is to 60, that is 25 per cent of the fuel fired escapes unburnt. In view of the importance of the subject it is unfortunate that there has been so little work done in measuring the efficiency of combustion in locomotives. Some work has been done on the testing plants and this provides our only really accurate information on the subject. Such work should be extended to road tests whenever any new development or device having to do with combustion is under trial. The measurements required are not difficult to make; fuel, steam and smokebox temperature are routine measurements. For the smokebox gas analysis it is necessary to take a sample representing average conditions throughout the test. This is easy if a perforated sampling pipe is run through the smokebox, and connected to a small electrically driven centrifugal pump on the dynamometer car so that a continuous stream of gas is drawn out of the smokebox. Beyond the pump a part of this stream can be diverted into a good sized collapsible bag of thin rubber which is empty at the beginning of the test. At the end of the test the bag will contain a well mixed average sample and fifteen minutes work with a standard Orsat apparatus will give the composition of the gas.

"This ends the attempt to picture the principles which underly combustion in the locomotive boiler. I need not emphasize the commercial importance of the problems involved since the class I railroads in the United States in 1927 spend for fuel for road locomotives the sum of \$310,869,524."

### Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading reached a new high point for the year during the week ended May 5, amounting to 979,662 cars, as compared with 961,928 cars in the preceding week, which had been the

highest weekly total to date in 1928. The new figure, however, represents a decline of 45,099 cars from the corresponding week of last year and of 16,554 cars as compared with 1926. Ore loading amounted to 16,096 cars, a decrease as compared with last year of 40,667 cars. Coal loading, amounting to 154,356 cars, was 2,146 cars lower than the total a year ago. Increases were recorded in the loading of grain and grain products and of miscellaneous freight as compared with loading in these classes in the corresponding week of last year. Loading in the Central Western and Southwestern districts was larger than a year ago but declines were shown in other districts. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

#### REVENUE FREIGHT CAR LOADING

Week Ending May 5, 1928			
Districts			
Eastern	234,129	238,469	242,838
Allegheny	199,991	209,917	201,840
Pocahontas	54,382	61,877	53,356
Southern	149,047	154,263	149,010
Northwestern	124,679	155,148	142,961
Central Western	139,545	134,255	133,531
Southwestern	77,889	70,832	72,680
Total Western Districts	342,113	360,235	349,172
Total All Roads	979,662	1,024,761	996,216
Commodities			
Grain and Grain Products	43,741	40,575	36,329
Live Stock	28,447	29,501	28,960
Coal	154,356	156,502	162,454
Coke	10,313	10,826	11,923
Forest Products	65,752	68,745	74,304
Ore	16,096	56,763	38,344
Mdse., L. C. L.	263,961	264,908	265,816
Miscellaneous	396,996	396,941	378,086
May 5	979,662	1,024,761	996,216
April 28	961,928	1,021,576	995,408
April 21	944,694	950,545	973,158
April 14	912,377	949,561	964,794
April 7	919,296	953,907	929,343
Cumulative total, 18 weeks	16,507,405	17,441,475	17,028,647

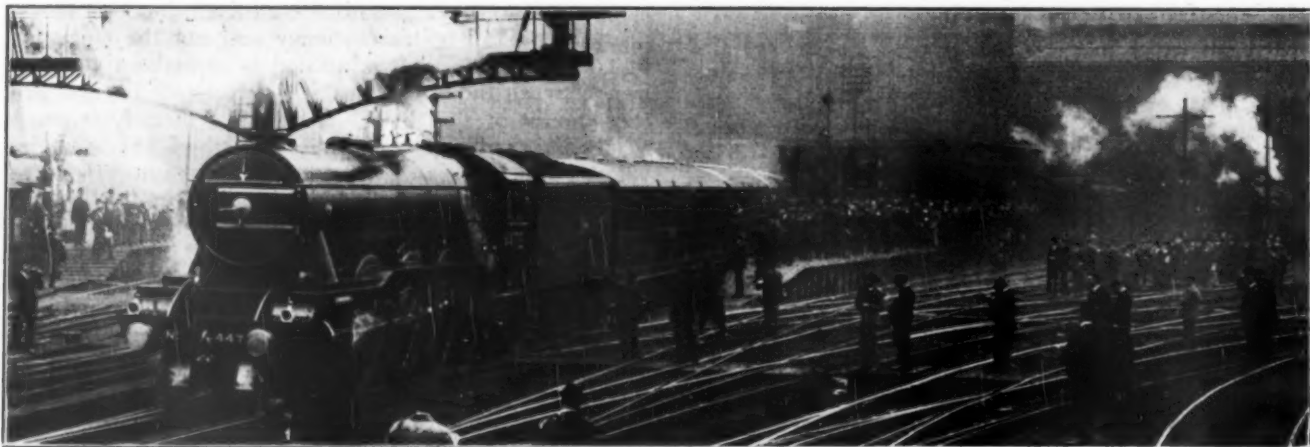
The freight car surplus averaged 320,762 cars during the period ended April 30, as compared with 340,608 cars on April 22. The total included 140,091 coal cars, 134,069 box cars, 20,837 stock cars and 15,268 refrigerator cars.

#### Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended May 5 totalled 64,278 cars, an increase of 515 cars over the previous week and an increase of 2,619 cars over the same week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
May 5, 1928	64,278	42,145
April 28, 1928	63,763	41,972
April 21, 1928	62,195	41,209
May 7, 1927	61,659	38,572
Cumulative Totals for Canada		
May 5, 1928	1,123,881	721,484
May 7, 1927	1,087,429	706,408
May 8, 1926	992,358	674,204

\* \* \* \*



The "Flying Scotsman" Leaving on Its First Regularly Scheduled, 392-Mile Non-stop Run, London to Edinburgh



# The Locomotive as a Factor in Fuel Economy\*

*Possibilities of the future and of designs now available—  
A suggested basis for retirements*

By A. W. Bruce

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WITH the limitations, now in sight, for future locomotive development, it is probable that the maximum indicated horsepower produced in any single unit will never exceed perhaps 10,000 i.hp. and this is considerably in excess of present-day possibilities. Before reaching this limitation of output, assuming the same inlet and exhaust pressures, question will be raised as to whether reciprocating engines or turbines are most economical. Until a satisfactory condensing system is found for locomotive work, however, the turbine locomotive need not be seriously considered.

In considering the reciprocating engine indicator card, we find two ways of increasing its area: (1) By an increase in the initial pressure, and (2) by a decrease in the exhaust pressure.

Since condensing offers, so far, the only known means for materially decreasing the exhaust pressure, we are confined to an increase in the initial pressure, in this way differing from both stationary and marine installations where space is not so limited and where varying climatic conditions may be contended with to better advantage. If a condensing system for railroad service is ever satisfactorily brought out, one of the most promising developments will be the maintenance of the present reciprocating type locomotive, but exhausting into a turbine located on the tender, thus providing maximum possible increase in power output for any given wheel arrangement. This system has been under consideration for some time, but so far with no commercially satisfactory results.

## The Two-Pressure Stage System

With high-pressure steam in stationary service, the latest practice in some cases uses two installations. The first is a system using comparatively low pressure and differing in no way from present installations; the second, or high-pressure system, is imposed on, and exhausts into, the low-pressure system. In this way present installations are considerably increased in power and economy at a comparatively low cost. This, of course, becomes practically a two-pressure stage installation.

This arrangement has already been applied to locomotives and offers one of the most promising solutions known at present. Three cylinders are used, the center cylinder taking the high-pressure steam and exhausting into the two outside cylinders, which also receive a lower-pressure supply from the tubular portion of the boiler.

If we are to retain single-stage initial pressure, we are driven to either compounding or limited cut-off, both of which systems offer some objections, although

we find here the poppet valve as an alternate for the better handling of exceedingly high pressures.

Generally speaking then, high-pressure steam seems to offer the most attractive means of increasing the efficiency of the reciprocating steam locomotives of today, and it may be expected to gain in importance very rapidly.

One of the chief difficulties in high-pressure steam generation is the maintenance of boiler efficiency, which tends to decrease with an increase in pressure, owing largely to the greater-temperature head required for the generation of high-pressure steam, which would naturally result in higher smokebox temperatures. We have the decreased boiler efficiency opposed to the increase in engine efficiency. The combination must be carefully analyzed if we are to effect an appreciable net saving of any amount.

## How High Will Pressures Go?

Just how far we shall go with high-pressure steam is very indefinite at the present time. While stationary plants have gone to the critical point of steam generation, which is about 3,200 lb. per sq. in., it is not likely that this will be done in locomotive service for some time to come, and it would appear at this time that somewhere between 1,000 and 1,500 lb. is as far as it is economical to go. In fact, 1,000 lb. will probably be sufficient for locomotive service unless some new development appears.

In the near future, we may expect to see experimental locomotives operating with boiler pressures up to 1,000 lb., with three cylinders, probably compounded; with water-tube fireboxes using coal fuel burned on grates; with improved draft apparatus and developing up to perhaps 7,500 i.hp.; with a steam consumption, in general service, not exceeding 14 or 15 lb., and with a coal consumption probably less than 1½ lb. per i.hp. If this cannot be done, it would hardly seem worth while to go to the necessary complication and expense.

## Present Possibilities

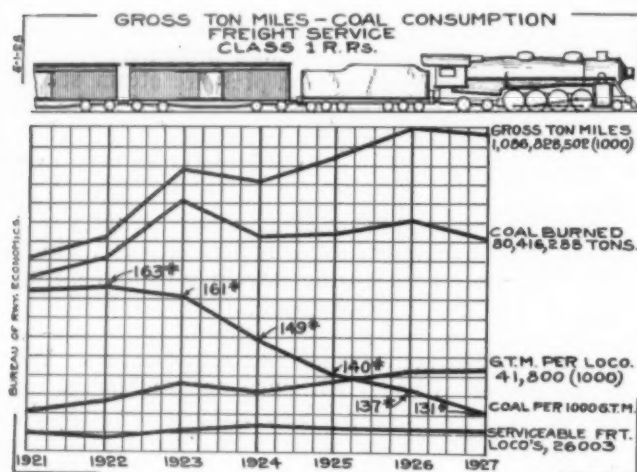
The big savings to the railways, however, will come with the scrapping of their present obsolete power, the handling of freight in through maximum-tonnage trains, through grade reduction, in double tracking, together with the elimination of all possible standby losses. In other words, to obtain maximum efficiency we must operate the machine, as a whole, at maximum capacity and continuously in order to obtain low-unit costs. This will result in fewer locomotives numerically, but engines much more powerful and better adapted individually to the particular service in which they will be used.

We have still to contend with the human element. Probably nowhere else in the whole railroad system is

\* Abstract of a paper presented at the convention of the International Railway Fuel Association held at Chicago, May 8 to 11, 1923.

close understanding and co-operation of more vital importance than in the cab of the modern locomotive. Without this the efforts of the designer or the executive toward fuel economy are of little avail. We must share largely all past and future fuel credits with the engine crew direct, as well as with those responsible for their supervision and instruction as to the proper use of fuel.

The first chart shows us what has been accomplished in freight service on Class I roads through organization and a relatively small number of strictly modern locomotives. Note that the number of serviceable freight



This Chart Shows What Has Been Accomplished in Freight Service on Class I Roads with a Relatively Small Number of Modern Locomotives

locomotives varies very slightly from year to year, while the total number of gross ton-miles is rapidly rising, having increased about 40 per cent between 1921 and 1927. In spite of the rapidly increasing gross ton-miles, the total coal burned has remained nearly constant for the past few years. The coal per thousand gross ton-miles has decreased nearly 20 per cent in the past few years. It is to be hoped that this figure will continue to decrease at about the same rate for some time to come, although this is doubtful with present equipment.

The second chart shows us a similar situation in passenger service on Class I roads and repeats the showing made in freight service, only to a more limited extent.

Fortunately, no finer body of men exists today as a whole than is found in the mechanical department of any large railroad. The railroads may, then, be assured that all possible economies owing to the use of modern locomotives are obtainable—all that is necessary is the modern locomotive itself.

#### The Evolution of Freight Power

Let us take a concrete case, illustrative of conditions existing on practically all large railroads today. The road selected for illustration is typical of many systems in so far as its motive power is concerned.

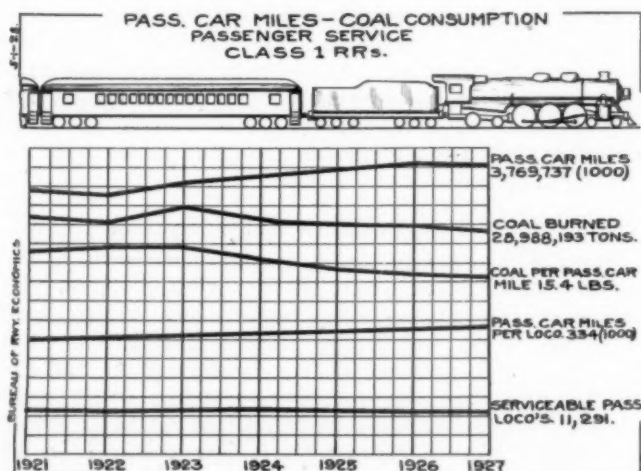
This road, in common with most other large roads, about 1903 to 1908, standardized on a 22-in. by 32-in., 2-8-0 type locomotive with 63-in. wheels, having about 42,000 lb. tractive force. This was the usual design of first line freight locomotives at this time. It had a weight on drivers of 179,000 lb. and a total weight of a little over 200,000 lb. It was of the simplest design having slide valves, Stephenson gear, and, of course, used sat-

urated steam. Many of these locomotives are still running today on lines of secondary importance, although most of them have been modernized to the extent which their condition has justified, with superheaters, piston valves and outside valve gear as they have gone through the shop for heavy repairs.

Next came the 2-8-2 type locomotives built for heavy road service as a successor to the previous 2-8-0 type. They have 28-in. by 32-in. cylinders, 63-in. wheels and a tractive force of 57,500 lb., with a weight on drivers of 236,000 lb. and a total weight of 318,000 lb. This means an increase of over 30 per cent in the driving axle limitation and slightly over 50 per cent in total weight. Such locomotives were built originally about 1912, and, of course, have increased gradually in size and efficiency up to the last purchase about 1924 or 1925. The 2-8-2 type, up to the limit of its capacity, has always been one of the most successful wheel arrangements used in general freight service.

This road, like most systems, has one or two particularly hard divisions of undulating profile, over which four-coupled axles are insufficient to handle the full-tonnage trains. Hoping to overcome the difficulty, this road purchased for use on this division some of the earliest and most powerful 2-10-2 type locomotives built. They have 31-in. by 32-in. cylinders, 63-in. wheels and 83,000 lb. tractive force, with a weight on drivers of 339,000 lb. and a total weight of 420,000 lb. In this case, the driving axle loading is increased something over 15 per cent and the total weight a little over 30 per cent. These locomotives were purchased from 1916 to 1918 and may be considered as being adapted only to the comparatively slow-operating speeds general at that time.

In order adequately to meet present-day conditions, this road purchased in 1927, a 2-8-4 type, having 28½-in



Passenger Car Miles and Coal Consumption for Passenger Locomotives on Class I Roads

by 32-in. cylinders and 70-in. driving wheels, instead of 63-in., as heretofore, and a tractive force of about 70,000 lb. With the trailer-truck booster, this is increased to about 82,000 lb., or virtually the same as the 2-10-2 type which they supersede. They have a weight on drivers of 276,000 lb. and a total weight of 443,000 lb.

The driving axle load remains about the same, but the total weight has increased about five per cent over the 2-10-2 type. Virtually the same starting force has been obtained as on the five-axle locomotive, at the same time using a driving wheel 10 per cent greater in di-



ameter. This means increased ton-miles per hour with decreased maintenance. The power output is considerably greater, largely because of improved general design and accessories. The four-wheel trailer truck has proved remarkably successful and provides a very steady riding engine. The large capacity tender facilitates continuous movement.

#### How the Modern Locomotive Compares With Its Predecessors

Operation over a division which has a length of about 114 miles, with limiting grades approximately one per cent, both east and west, averaged about as shown in the table.

#### Operating Results of a 2-8-4 Type Compared with a 2-10-2 Type

	2-10-2	2-8-4	Difference per cent
Tonnage .....	2,443	2,720	+10
Coal per 1,000 gross ton-miles.....	134 lb.	94 lb.	-30
Running time .....	7-11	4-33	-35
Gross ton-miles per hour.....	38,800	68,150	+75.6
Gross ton-miles, total.....	278,502	310,080	+10
Coal fired per trip.....	137,320 lb. 18.6 tons	29,140 lb. 14.6 tons	-22

Assuming that a 25-day month and one round trip per day, 288 miles, we obtain a mileage per month of about 5,700. Assuming this to be obtainable with either type, bearing in mind that, owing to the increase in actual tonnage obtainable, 30, 2-8-4 type locomotives have replaced 34, 2-10-2 type on this division, the relative coal consumption per year will be 379,400 tons for the 34, 2-10-2 type locomotives, and 262,800 tons for the 30, 2-8-4 type locomotives—a difference of 116,640 tons. Assuming an average cost per ton of \$3, the actual saving in fuel alone on this one division, brought about through the use of these new locomotives, is approximately \$350,000. There will be further savings, incidental to the use of 30 instead of 34 locomotives of about \$90,000 a year. This brings up the total yearly saving on this division to about \$440,000.

As a matter of fact, 50 locomotives of the 2-8-4 type were purchased in 1927, the remaining 20 being allocated to other divisions. It is expected that these 50 locomotives will show a total yearly saving in operating cost alone of between \$650,000 and \$700,000.

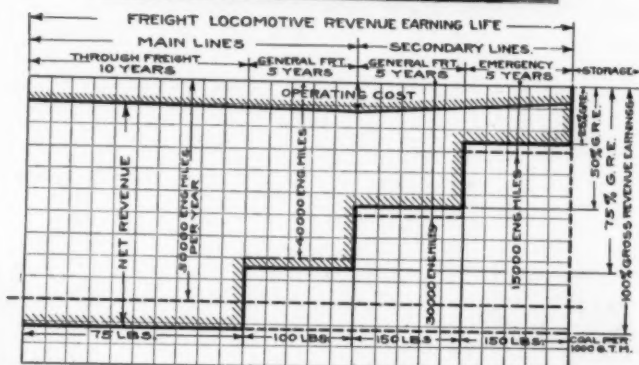
Bearing in mind the fact that the average active life of a locomotive is not far from 20 to 25 years, depending on the road and, furthermore, that our present high powered locomotives with comparatively low fuel consumption have only been in general use for perhaps less than five years, we may safely assume that conditions similar to those cited above are to be found on practically all the roads in this country today to the extent that the coal consumption of probably 66 2/3 per cent of the locomotives in daily freight service could be improved about 30 per cent, based on a gross ton-mile performance.

The possible saving would be 30 per cent of 66 2/3 per cent of 80,416,000 tons, or 16,083,000 tons. Assuming the average price per ton over the whole United States as \$3.50, this means a possible yearly saving in fuel alone through the modernization of all freight power of approximately \$56,291,200. This figure is obtainable through the co-operation of the railway organization and the locomotive builder.

Leaving the locomotive builder out of the picture for the moment, we find that in 1927, the average coal used per thousand gross ton-miles Class I roads was 131 lb. For the year 1926, this figure was 137 lb., or a saving of a little under five per cent, equivalent to \$14,072,800, or about one quarter of the figure indicated by use of modern locomotive equipment throughout in freight service.

#### The Life of a Freight Locomotive

The last chart presents a picture of the revenue life of the average main line fast freight steam locomotive, which is here considered (for example only) as being from 25 to 30 years. If properly maintained and operated under the same conditions, the revenue capacity of any locomotive in gross ton-miles, should remain fairly constant during its active life. Unfortunately for



Revenue Earning Life of Freight Locomotives in Main and Secondary Line Service

the locomotive, however, past experience has shown that new types of improved motive power have come into general use about every ten years, which limits the maximum productive life of any new locomotive to 10 years. At the end of this period, following the installation of the later improved power, the locomotive is set back to drag and emergency service on the main line, with a probable reduction in gross ton-mile capacity of at least 25 per cent.

This period may be expected to last perhaps five years at the end of which the locomotive is again set back, owing to the purchase of additional new locomotives to general service on secondary lines, with a further reduction in gross ton-mile capacity of at least another 25 per cent. This service on secondary lines may last another five years, or may be prolonged to ten years, if conditions warrant. It is probable, in any event, that the final five years of the locomotive's existence will be spent in storage with occasional emergency use, giving a return of not over 25 per cent of its original gross ton-mile capacity. Note the increasing coal consumption per 1,000 gross ton-miles and the decreasing mileage with each setback.

If the secondary lines are too light to take the engine under consideration, the third period will be omitted and the final one extended.

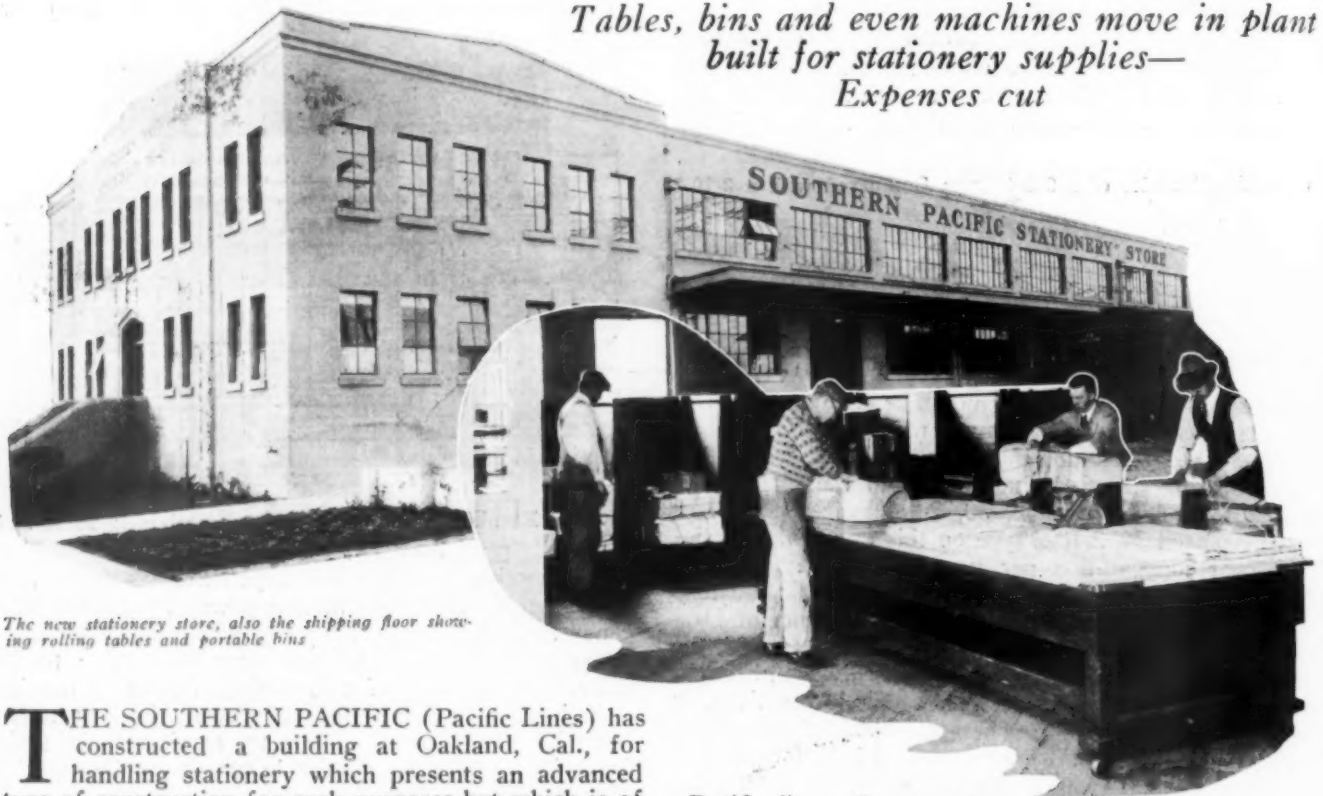
#### Is the Economic Age Limit Exceeded?

It will be seen then that approximately 50 per cent of the total work done during the 25-year life of the locomotive, has been done during the first third of its existence. Probably two-thirds of its total net revenue return is made during this time.

Can there be any plainer illustration than this to show the economic necessity for wearing out the locomotive in the service for which it was originally designed and the immediate scrapping when this has been accomplished, as would be done with any machine tool in a modern quantity production plant? How are we to justify the relatively heavy and rapidly increasing maintenance and operating costs on an obsolete piece of equipment, operating at perhaps 50 per cent capacity, under conditions for which it was never intended?

# Portability Keynote of New Supply House on S. P.

*Tables, bins and even machines move in plant built for stationery supplies—  
Expenses cut*



*The new stationery store, also the shipping floor showing rolling tables and portable bins*

**T**HE SOUTHERN PACIFIC (Pacific Lines) has constructed a building at Oakland, Cal., for handling stationery which presents an advanced type of construction for such purposes but which is of interest particularly for the equipment installed and steps taken to facilitate material handling. In this plant, the machinery, the tables and bins are equipped to move about wherever necessary to conserve time and labor. By superseding antiquated facilities and improving methods, the new plant saves \$4,400 in payrolls and returns \$5,000 more to the company through increased paper salvage, a total of \$9,400, or 15 per cent on an investment of approximately \$65,000 a year, not counting reduced fire hazards and reductions in stationery stocks which are also made possible.

## **Fire Resistant Building**

The plant is 60 ft. wide by 147 ft. long, and two stories high, with exterior walls of reinforced concrete finished with stucco. It is divided into equal parts by a transverse wall of reinforced concrete in which the openings are protected by fire doors. A concrete slab, supported on an earth fill at car-door height, forms the main floor of this building; while 2-in. plank, supported on 12-in. by 12-in. posts and finished with 1-in. cedar, forms the second floor. The roof is frame, covered with a built-up felt and asphalt roofing, and the window sash throughout are steel. The track side of the building has a long concrete platform with an incline approach, and on the opposite side is a concrete platform fronting a wide pavement for the use of street trucks. Steam heat equipment is installed throughout the office section and a hydraulic freight elevator of 6,000 lb. capacity serves the floors.

In this plant are carried and from it distributed all printed forms, writing paper and related supplies for the

Pacific lines, the average monthly stock amounting to approximately \$113,000. In order to take advantage of bulk buying, it must purchase well ahead. It therefore strives for economy in these purchases, which exceed a half million dollars a year, by refraining from charging such materials to operating expenses directly from purchase bills, or allowing each of 2,000 offices to procure and carry their own supplies independently of each other but instead by centralizing the operations of ordering, receiving and handling under a stationery storekeeper, where the stock can be protected, distributed quickly when called for and where waste can be accumulated and recovered for further use. The new facilities reflect a long experience with centralized handling and are adapted to meet the problem in its various ramifications.

In addition to the elevator operating between floors, the equipment includes a portable elevator for handling heavy cases of paper stocks. This elevator reduces the labor of handling and storing heavy commodities; it also saves in storage space and serves as a safety device.

## **Make All Scratch Pads**

An automatic paper cutter is provided. If this cutter were used for no other purpose than cutting paper stock, it would effect a saving of several thousand dollars a year.

In the large shops, foremen are provided with small pieces of blank cardboard, 2 in. by 4 in. in size for use in making memoranda and sketches which they pass out to employees. This cardboard is cut from old



material. Clip paper is also cut on this machine, and the saving in clip paper and shop memorandum cards prepared in this way amounts to \$2,000 annually.

The paper cutter operator places all paper trimmings in a reclaimed packing box which stands on casters, and this scrap is used at the material stores for packing purposes instead of excelsior, reducing the purchases of excelsior \$620 a year.

A paper-tying machine furnishes an efficient tool for binding correspondence paper, memorandum cards, etc. It ties securely and makes a knot without wasting twine.

#### Tables on Wheels

Exceptionally handy adjuncts to the equipment are tables which are fitted with casters. In the receiving department, the stockman places one of these tables

wheeled through the aisles, serving both as a desk and ladder. One step on the table permits the man to reach the top shelf of all racks, count the stock and record the figures in the book without other assistance. These small tables, fitted with rubber tired casters, are also used in filling requisitions. Packing boxes are placed on the table and wheeled through the store until filled. The bottom of each box is removable, so that the contents are deposited on wrapping paper when the box is lifted, thus facilitating wrapping at the shipping counter.

Small waste baskets are carried on the tables to receive all the trash and paper that accumulates while filling requisitions. When the store helper brings a table to the packing room, he empties each basket into one large refuse bin, a practice which dispenses with

Rolling Table and  
Order Boxes



Using Rolling Table to Count  
Stock

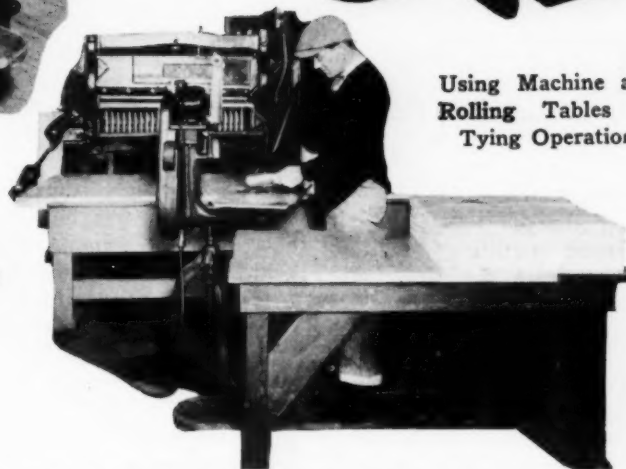


Handling  
Stationery  
in Bulk



Moving a  
Portable Bin  
to Car by Lift  
Truck

Using Machine and  
Rolling Tables in  
Tying Operation



alongside one of the cases in which forms are received from printers. As these forms are removed, they are placed in numerical order on the table and the receipts recorded.

The material is then weighed for freight charges on a small scale kept on another movable table and the table is then moved bodily to the elevator, taken upstairs and the stock placed on the shelves. When paper is cut, this is also placed on such a table, the tying machine brought alongside and the paper passed through the machine to another table on casters, which is then wheeled to the elevators and taken upstairs where the paper is put away. By this arrangement, handling is greatly reduced.

The section stockman uses a smaller, though similarly constructed, table for taking inventory. The stock book is placed on the table in a bookholder and the table

the need of refuse cans throughout the store.

One table is especially adapted for padding clip paper. Three stacks of clip paper, containing 286,000 sheets, are placed on this table at one time. A beam is placed over the top and the paper compressed by clamping-down bolts which are fastened to the table when the clip paper is being prepared.

#### Portable Bins Save Handling

The packing cases used for shipping are sometimes old and full of nail holes, making it difficult to fasten the boards back by nailing. A tying machine is therefore used, by means of which two strands of wire are quickly fastened around these cases to hold the cover and contents intact.

Old records are sent to the stationery store and any that are blank on one side are placed in portable bins,

which are carried by a hand-operated lift truck to the paper cutter where they are cut up for scratch pads. Obsolete tariffs turned over to the stationery store, are also stored in these bins until they are cut up for scratch pads or sent to the duplicating bureau for printing forms. Some of these bins have also been adapted for handling waste scrap paper and sweepings collected during the day by building a door across the open end of the bin. They have also been adapted for coal bins by building a door in the top through which coal can be received and by making an opening in the front through which the coal can be reached with a shovel. These bins are filled outside the building and moved inside by a lift truck, thus keeping dust away. Similar bins are also used for consolidating shipments. As packages are wrapped, they are placed in these bins and when filled, taken direct to the car by the lift truck, thus eliminating much extra handling.

Aside from the saving in labor effected, the foregoing methods are also encouraging the reduction in stationery stock, as the natural result of a quicker and better service to users, who are now limited to a 60 days' supply. Closer inspection of the stock received from the printer is also being secured and a check on the receipts is afforded, which places the company in a position to know that it is getting exactly what it pays for. The plant is operated under the general direction of A. S. McKelligon, general storekeeper.

## Few Brazilian Roads Prospering

By Alcides Lins

Director of Railways and Public Works, State of Minas Geraes, and Editor, Brazilian Railway Review

**I**NSUFFICIENT traffic density for Brazilian railways taken as a whole is assigned as the reason for the failure of these lines to attain the most economical use of their plants and thus report earnings commensurate with their size and investment.

Inadequacy of rates in the case of government-owned properties is also cited as one reason for the persistent operating deficit on these properties in an extract from the Brazilian President's annual message to the federal Congress. During 1926 the principal government-owned lines reported a deficit equal to \$7,216,680, more than half, or the equivalent of \$4,620,000, being the loss on the government's main system, the Central of Brazil.

An attempt to minimize such losses in the future has recently been made in the inauguration of an increased rate schedule. This new schedule did not become effective until October, 1927, and thus the effect is not indicated in data now available.

The principal Brazilian companies had in operation 31,333 kilometers or 19,470 miles of line at the close of 1926. This compares with 30,731 kilometers or 19,076 miles at the close of 1925 and 28,556 kilometers or 17,770 miles in 1920. Only nine of the twenty states have as much as 1,000 kilometers, or 621 miles of line.

Five roads operating 11,018 kilometers, or 6,846 miles, of line report gross revenues for 1926 equivalent to \$49,951,680. The nine principal companies reported gross revenue in 1925 equivalent to \$73,458,000 as against the equivalent of \$61,606,000 in 1924.

Of all the roads Sao Paulo, operating but 247 kilo-

meters, or 153 miles, of line, is the most prosperous, reporting in 1925 gross revenues equivalent to \$10,940,000, second only to the Central of Brazil, which reported gross revenues of \$15,074,000 from operations of its 1,689 miles of line.

The favorable position of the Sao Paulo with respect to traffic density is indicated by the 1924 figures of Table 1.

Thus from the compilation it is seen that with less than one-tenth the mileage of the Rio Grande do Sul or Leopoldina, the Sao Paulo nevertheless produced

Table 1

	Miles of Line	Net ton miles (thousands)
Rio Grande do Sul .....	1,572	153,189
Leopoldina .....	1,819	202,156
Sao Paulo .....	153	202,314
Great Western .....	1,010	66,047

one-third more net ton miles than the former and slightly more than the latter. With less than one-sixth the mileage of the Great Western it produced more than three times the net ton miles.

The Central of Brazil, the major government road, produced in 1925 a total of 774,140,000 net ton-miles over its 1,689 miles of line. This is equivalent to 458,340 net ton-miles per mile of road and compares with 1,322,300 net ton-miles per mile of road as the 1924 traffic density of the Sao Paulo. The Central of Brazil reports the lowest cost per unit (i. e. ton-kilometer) of traffic but also the lowest receipts and consequently has been unable to avoid a deficit. The Sao Paulo reports the highest receipts per unit with the Great Western next. The latter reports the highest cost.

Much progress is reported in the development of traffic interchange among lines about Rio de Janeiro. River navigation lines on the Sao Francisco are also parties to the scheme. There is also an increasing interchange of rolling stock between similarly gaged roads, through the Central Railway Clearing House at Rio de Janeiro.

Annexed to this association is now a rate commission, created in 1924, with voting memberships held by representatives of the affiliated railway lines. Non-voting membership with debating privilege is granted representatives of commercial and agricultural associations.

The commission studies questions of regulation, tariffs and merchandise classification and is consulted in these matters by the Ministry of Public Works. Its decisions are subject to governmental approval and if objection is made to rate changes, the effect of these is deferred until the matter is disposed of at the following session.

The federal government has adopted the policy of attempting to improve and intensify traffic on existing lines instead of building new roads or extensions.

Electrification is also in progress for the Paulista has already electrified 132 kilometers, or 83 miles, and is planning to extend this an additional 152 kilometers, or 94 miles. Material for this latter has already been ordered from the General Electric and the Westinghouse Electric & Manufacturing Co. Other companies also have electrification plans.

The State of Minas Geraes, the most populous of the republic, has recently increased the inducements to new railroad capital by extending the time of concession privileges from 50 to 90 years. It has also raised the kilometric subsidy it offers to privately built railways 30 contos (\$5,800 per mile) and guaranteed approval of higher rates to protect the new capital.



# Safety Section Meets at Buffalo

*Progress reported in reducing employee accidents  
—Report on safety in yard work*

THE Safety Section of the American Railway Association held its eighth annual meeting at Hotel Statler, Buffalo, N. Y., on Tuesday, Wednesday and Thursday of this week, with a large attendance.

There were about 300 present at the opening session, including about 100 representatives of the New York Central Lines and large delegations from the Lackawanna, Union Pacific, Missouri Pacific and the Pennsylvania. D. G. Phillips (Wabash), first vice-chairman, presided, Chairman L. F. Shedd (C. R. I. & P.), being detained at home. Mr. Shedd's report, read by J. E. Long (D. & H.), recounted the activities of this section in conferences with other sections A. R. A.; with the National Safety Council and other safety interests. Vice-president E. E. Calvin of the Union Pacific and A. G. Wells of the Santa Fe are a committee of the Operating Division, A. R. A., to keep the Safety men in touch with the several divisions.

Secretary J. C. Caviston reported among other things, that placards containing the decision of the Supreme Court of the United States clarifying the law of safety at highway crossings had been distributed to the number of over 30,000. The code of general safety rules formulated by a committee of this section 18 months ago but on which the committee did not recommend specific action, has been used by 22 roads, eight of which issue the rules to all departments. Seventeen of these roads apply discipline in cases of disregard of these rules.

## Committee on Education

L. G. Bentley (C. & O.), chairman of the Committee on Education, outlined the progress that has been made in working for the goal (set in 1923), of 35 per cent reduction in casualties to employees in seven years. Great things have been done, some roads having reduced their records that much already, but we still fail to use all our powers. Already the figures indicate that 1,678 employees' lives have been saved but still the percentage of diminution in deaths is not nearly so large as in non-fatal injuries. "We must do better; we *can* do better."

## Statistics

Thomas H. Carrow (Penn.), chairman of the committee on statistics, reviewed the I. C. C. records of accidents for 1927 and pointed out the need of more intensive study of details of causes. For example, every accident in yard work should be studied as thoroughly as has been done in the case of coupling accidents, and equally encouraging results could be expected. Reductions in employee injuries shown by the records of the last few years have been due not to mere luck or favoring circumstances, but to definite work of safety committees; and this should spur us to renewed energy.

## Highway Crossing Accidents

H. A. Rowe (D. L. & W.), chairman of the Committee on Prevention of Highway Crossing Accidents, urged continued intensive study of the problem. There is no new lesson, but there should be renewed intensity of application to the lessons already familiar to us. This is the spirit of the pamphlet that this committee

has published for this year. The American Automobile Association will assist in circulating this pamphlet and so will the Boy Scouts. The colored poster (of which 670,000 copies were used in 1927) should go up in 2,000,000 places this year. Mr. Rowe reported that the reduction in crossing casualties shown in 1927 was continued in January, 1928; the month showing 21 few persons killed and 75 fewer injured than in 1927. Mr. Rowe commended the locomotive runners who so well perform their nerve-destroying task, but said that occasionally one failed. He would require the whistle signal always to be continued until the locomotive passed beyond the crossings. Ten states have utilized the code of rules made by the National Conference on Street and Highway Safety. This conference is trying to unify city traffic rules. It is the belief of the committee that there is an undeniably lessened primary hostility toward the railroads in connection with mishaps at crossings. The public begins to accept the view that on the people rests the burden of establishing uniform highway travel rules and strict enforcement of penalties against careless drivers. At the same time, the railroads must do their full duty, and go beyond their duty, in warning travelers of the hazards at crossings.

Thomas C. Cashen, president of the Switchman's Union of North America, read a paper reviewing the accident records with special reference to yard men's work, making recommendations for improved education and training of new men. He called for action looking to the adoption of a standard hand-brake wheel and ratchet.

## Train Service Accidents

C. T. Bailey (O. S. L.), chairman of the committee on this subject, presented a report analyzing the last annual statistical report of the Interstate Commerce Commission, with suggestions for preventive measures. Safety officers should study the records of accidents occurring among employees under their supervision and see that the necessary lessons are promulgated.

## A Union Pacific Record

The outstanding feature of the first day's sessions was a paper by Herman H. Larson, train-master of the Union Pacific at Council Bluffs, Ia., on safety in yard work, an abstract of which follows:

## Safety in Yard Work

By Herman H. Larson  
Trainmaster, Union Pacific

In the yard of the Union Pacific at Council Bluffs, over which I have jurisdiction, it has been 1015 days since the last reportable injury to an employee of the transportation department, and almost that long since the last injury resulting in loss of one day's time; or 933 days to be exact. The yard is not a modern one. There is a maximum of 40 and a minimum of 25 switch engine shifts worked daily during the year, and 902,330 cars were handled in 1927. Eight railroads interchange cars with us and all east and west bound trains are broken up and made up here. We have all other common switching conditions to contend with, such as repair

tracks, industries, passenger car yard, engine terminal, etc.

A total of 7650 consecutive green fruit trains have been delivered to connections at Council Bluffs on time or ahead of time on the schedule, and each train has cars for the eight railroads mentioned. These green fruit trains average 20 trains a day, during the heavy season, and our heaviest day last year was 35 trains, 24 of which were green fruit trains. Not one of these trains has been late since December 20, 1925. I state these facts not to boast, nor advertise, but so you may understand what the men in this yard have to contend with and what their safety record signifies.

Safe operation carries more weight with us than increased tonnage or decreased operating cost; more than increased revenue or popular approval of operating facilities; and I have come to believe that the everlasting emphasis laid upon it in our organization is largely responsible for the results achieved in that direction.

Up to a few years ago, the situation on our road was similar to that on American railroads generally. We had our rules and our safety appliances, but still there was something more evidently needed. In our belief, that something was, and is,—*better training of men in the details of safe operation*. And that training means not only safety education, but *real safety enforcement*. We have attempted a broad educational plan consisting of advertising by pictures, by statistics, by meetings, and by personal talks. Reasonable results have been obtained, but there is much more that can yet be done to eliminate controllable accidents.

#### Selecting Men for Employment

The first step in Accident Prevention to train and yard men is to taboo the old method of handing a man a lamp and switch key and putting him to work. The yardmaster employing the man should scrutinize his record closely and avoid the undesirable. The applicant is then interviewed by the superintendent personally as to his attitude on safety and willingness to obey rules. He is then turned back for detailed instructions, and to see that personal responsibility is firmly implanted in his mind. This takes a little time, but the effect is worth it. The student must make sufficient trips with various conductors or foremen to qualify, and he must be OK'd in writing by these various men, who are made to feel that they are assuming a personal responsibility in approving him for further service.

It required courage in the old pin and link day to be a train or yard man. There was little thought of safety. The fellow who kept the cars coupled up or pulled a pin on the first trial, who got on a fast moving car or engine regardless of hazard or chance he was taking, was considered the best railroader. Their occupation appealed only to the *adventurous, hardy type*. Today it is not possible to distinguish the ordinary train or yardman from any other high-class citizen. Many are high school graduates. Many are home owners and men of affairs in the community. The badge of honor they wear is not a wounded hand, it is usually a lapel button showing the railroad they work for, and, in many cases, it is the conventional Safety button.

#### Education

We began our active campaign to eliminate accidents in 1923, and, with the co-operation of the entire yard force, nine yardmen were removed from the yard service on account of being unsafe. Some of these men were transferred to other service where the employment was more suited to the individual, but others were permanently dismissed.

The most important medium of education is the school

class. Instead of the chairman being the whole thing, as he was a few years ago, every person attending these meetings has a voice in the discussion and the decisions. All remarks in a safety meeting are privileged. No disciplinary action is taken on any violation reported there. Records are maintained and if it develops that some employe has not attended a meeting for some time he is asked for an explanation. At our division meetings we have as many as 300 visitors, largely train and yardmen, all on their own time. During 1927 every yard employe in Omaha and Council Bluffs attended one or more meetings; 65 per cent attended three or more. In addition to this, assistant yardmasters frequently hold small group meetings. During bad weather every man is cautioned before starting work on his shift to be on his guard against slippery conditions and to take no chances. Through the medium of these well attended meetings, unsafe conditions have been corrected as far as possible to do so.

#### Cleanliness in Yards

Yards are kept in the most cleanly condition possible. Drawbars, brake shoes, scrap material, and coal have been eliminated; likewise accidents from this source. Men are trained to report and correct such conditions right now, not after a while.

The section foreman, roadmaster or division engineer does not buck or stall either, when told about a little scattered coal or rubbish. Teamwork and cooperation are watchwords here. All we need to do is tell them where it is and they get it right now. We do the same for any department. We do it because we have learned that prompt and willing cooperation between departments avoids accidents for all of us. And we would have to do it whether we wanted to or not, because our superiors would run us off the job if we didn't!

#### Fixed Structures

Many close clearances were corrected, but results were not obtained until trainmen and yardmen were instructed by bulletin, time table, and word of mouth where these structures were and a strict rule was put in force that employes must *face in the direction the train is moving* and must be alert to their surroundings at all times. This feature of close clearances is made a special subject by the rules examiner.

Each foreman, yardmaster, and safety agent is continually checking and watching the switchmen, and each other to see that they keep alert. The man seen riding the top or side of a car without watching ahead in the direction he is moving is called aside and cautioned. If this does not correct his practice we may have to resort to discipline to properly impress him. The man who stands foul of a track while studying a switch list or checking cars is handled the same way. That is part of the training.

#### Coupling or Uncoupling Cars

It is our rule that under no circumstances may a man go between moving cars to couple, uncouple, or adjust drawbars. If apparatus is inoperative, trains must stop, and if necessary for a man to cross to the opposite side, it must be done over the top of the cars or around the end. No crawling under or over the drawbar is tolerated. If necessary to go between cars after stopping, it must not be done until stop signals have been repeated and acknowledged by all the crew, to avoid any possibility of mistaken signals. If defects in coupling or safety appliances are discovered between terminals, trainmen must card and chalk mark the cars showing the condition to warn other trainmen.

Accidents from coupling or uncoupling air or steam hose are eliminated by having the angle cocks or valves closed before parting the hose, with the train standing



still while this work is performed. Care is used in opening angle cocks to set air brakes to avoid force of air causing hose to whip and strike the workman. The practice of pulling hose apart except by hand is prohibited and this is carefully checked.

Hand brakes and brake clubs have caused many accidents and a study of the brake itself has resulted in adoption of better brake wheels, proper brake chains, proper length brake levers, etc.

The brake clubs were given close study by our men and a standard brake club adopted. Only standard Belknap brake clubs of the very best hickory are now permitted to be used, and yardmasters make frequent checks and observations to know that the clubs being used are not worn, cracked or defective in any way. We found the safest way is for a man to push and not pull on a club, and when applying the club to place himself in a position so that if something gives way he will fall against the car instead of away from it. In tightening up the chain he must feel it out before putting full power on the brake to avoid slipping or knotting of the chain. Yardmasters are required to demonstrate the proper use of the brake club and proper manipulation of hand brakes to every man entering the service.

#### Getting On and Off

We are absolutely enforcing rule 710 which prohibits men getting on the front or rear end of an engine or car as it approaches them, and only one man is permitted to ride on the leading foot board of an engine in the direction the engine is moving. In addition we prohibit men from riding between engine and cars when cars are being pushed or pulled, except when necessary to make cut between engine and first car; and from riding on leading foot board while coupling engine to cars. We do not permit them to ride on engine pilots, on deadwood, drawbars, brake beams, journal boxes, or brake wheels, nor on ends of cars containing loads which may shift. Footboards have been considered essential to yardmen's duties and required considerable initiative on part of the management to issue an order restricting their use. It took time and patience to stop practices of such long standing, but the effort was more than justified, inasmuch as accidents from this source have been entirely stopped. It took constant observation of the supervision and some discipline to break up the old footboard practice. Our men were occasionally ridiculed by their neighbors but they stood the gaff, and none of them would now go back to the old conditions.

#### Proper Position on Tops of Cars

Falling off or being thrown from tops of cars has been a major cause of injury to trainmen from the beginning of railroad history. We insist on the men standing or riding on the running board in the middle of the car when on top and being on the lookout for sudden stops. When hanging on the side of a car they must face in the direction the car is moving.

The practice of riding in the cupola is discouraged and trainmen are continually reminded to be on the alert for slack running in or out. Our men are required to sit down in cabooses or guard themselves just as they ask stockmen and others to do. Yardmen must know *where* they are shoving cars *before* they shove. Cars must be left far enough into the clear that if the other fellow shoves from the opposite end to a coupling, the slack running out at the farther end will not foul connecting tracks or lead.

A blue signal means poison and is not touched by anyone except the man that uses it for his protection. Men must be trained to be on the bottom for these signals at all times and not obstruct the view of them. Violations

have been severely dealt with, and yardmen are keen to observe whether or not the carmen are properly protecting themselves. Blue signals are essentially mechanical department employees' tools, and their indiscriminate use by others tends to lessen their effectiveness, especially since we require carmen to use blue flag protection for practically everything they do. Another big factor is to keep the metal blue flags clean and brightly painted.

#### Designated Crossing Paths

From time to time we hear of someone severely injured crossing through a railroad yard. Accidents from this source have been eliminated by designating certain roads or walks to use when entering or passing through the yard, keeping these open, and then policing the use of such crossings. It was necessary to dismiss several employees to make the instructions effective, but we stopped the accidents. Success has not been attained by the mere issuance of instructions and talking. It has taken hours of observation by supervision both day and night in all kinds of weather.

In the past there was a tendency to distinguish between those violations which resulted in personal injuries, and those resulting only in hazards. We impose discipline for hazard, as well as for occurrence. Not only the employee, but the immediate supervisor must answer for anything that might have been left undone on *his* part. The yardmaster is more than a figure-head. He is actually a supervisor. We require yardmasters to make daily reports showing their activities in safety, what they have observed, different men they have talked to, etc. These reports are examined and then filed in the general yardmaster's office. They reveal how many safety meetings a man has attended, date and time, who talked to him on safety and what particular things he was cautioned about.

While we have not eliminated accidents in all our yards, I wish to mention Omaha, another one of the yards in my district. This is principally an industrial and intermediate switching yard with many close clearances and heavy grades and curves. It is regarded as a pretty difficult yard. We interchange cars with eight different railroads and worked a maximum of 37 engine shifts during 1927 handling 437,614 cars.

In 1922 there were 47 personal injuries in this yard as against 7 in 1927, 4 of which were reportable and 3 lost time, a reduction of 80 per cent.

While safe operation requires no monetary justification, it should be stated that the intelligent application of safety devices and the enforcement of safety rules actually does reduce operating costs. For five consecutive years there has been an increase in our cars handled per switch engine, and overtime has been practically eliminated. The use of the wrecking derrick located on the district with which I am connected decreased from 98 calls in 1923 to 15 calls in 1927, a reduction of 84 per cent.

On the entire railroad there were but 41 casualties among train and yardmen in 1927 as against 119 in 1921.

Both employees and supervisors must realize their responsibilities as to maintaining their physical condition, and in trying to keep home life pleasant, as many accidents in the past have resulted from impaired health or worry caused by unfavorable conditions. When a man realizes and lives up to his responsibilities, the hazard of his occupation is greatly minimized. If he knows how to do his work and does it that way, he has a non-hazardous occupation. Insurance Companies have always classed trainmen and yardmen extra hazardous, but recently as a result of the Safety campaign some companies have reduced rates and others are considering it, while practically all are offering much better policies.

The proceedings of the convention subsequent to the first day will be reported in a future issue.

## Teamwork in Transportation and Communication\*

By Fred W. Sargent

President, Chicago & Northwestern

**T**EAMWORK as between the sellers of transportation and communication service and the users and purchasers thereof could be made of inestimable value to all. In the beginning of railroad development such teamwork did exist and the railroads were welcomed by the people as their greatest friends and benefactors. This era of teamwork was followed by an era of railroad baiting. There were some honest reformers, but along with them the demagogue prospered. A system of regulation was inaugurated which almost ended in strangulation. The honestly financed and managed railroad has been a common sufferer. Transportation progress has been retarded fully a quarter of a century. Only in very recent times have we begun to emerge, somewhat emaciated, and subjected by a process of legislative chastisement. But the storm, we hope, has abated. It will do no good now to revive its memories. Suffice it to say that any city, any state or any section of the country cannot long be prosperous without prosperous means of transportation and communication, each capable not only of maintaining its properties in the highest state of efficiency, but likewise capable of commanding new capital necessary to afford adequate facilities, new and modern devices, all so essential to modern and expanding commerce, which is the foundation of all economic and social progress.

If there are any degrees of fundamental industries, transportation and communication can be placed among the first. What we need now throughout all America is to create a state of mind so that the great mass of our people everywhere will think in friendly and cooperative terms with relation to their great transportation systems, and it may not be amiss to say that we also need this same state of mind in railway management toward the public that it serves—a spirit of mutual cooperation that will command confidence on all sides.

America's railroads could never be duplicated under our present plan of regulations. We started out in a spirit of teamwork and the people everywhere welcomed the railroads as their benefactors. We soon drifted into a policy of railroad regulation that put a stop to all progressive development and almost resulted in disaster. A system of regulation that dips into the details of management, that discounts the fruits of efficiency by reducing rates and increasing taxes, and that dictates the details of operation to an extent undreamed of when regulation began would even now tend to destroy the spirit of progress were it not that railway managements have not lost faith in the ultimate fairness of the American public.

The railroads are being regulated under a system of laws largely passed by 49 separate sovereignties in the days when the public was sorely aggrieved. While public sentiment has changed, yet the laws for the most part remain the same. The bulk of these laws were enacted from 1906 to 1913, both inclusive. During that period almost every state in the Union passed laws affecting freight and passenger rates, prescribing standards of service and regulating details of management, all of which as administered in connection with the admin-

istration of the federal laws, involving many of the same principles, enormously increased costs of operation and restricted the earning capacity of the carriers.

Our present system of regulation, especially of railroad transportation, has reached the point where it is tantamount to government ownership without government responsibility. The railroads pay more to their government in taxes than they do to their owners in dividends. The government proposes to recapture earnings in good years and leave the owners to bear the burden of all losses in poor years. The government guarantees nothing in the way of earnings, but assumes very large powers of management with relation to costs of operation. It controls the power to finance new improvements and refund old or maturing obligations. It controls the right to abandon an unprofitable line or to build one that is profitable. In short, it exercises most of the important functions of management.

This situation probably cannot be changed except through a slow evolutionary process so far as the letter of the various enactments is concerned. If wisely administered this situation is not serious and will not retard progress. If unwisely administered this situation could rapidly destroy prosperity. In view, therefore, of the very great powers of regulation assumed by the people through their government, it is most essential that the teamwork spirit be manifested everywhere. It is essential that the powers thus assumed be exercised with caution and wisdom. To secure such a result it is essential that the public, or at least that portion of the public that thinks, should make and keep itself conversant with at least the fundamental principle essential to successful maintenance and management of our various systems of transportation and communication.

In other words, the people through government having assumed these vast powers, have also assumed along with them a direct responsibility to see that the powers are exercised with caution and wisdom. To secure such a result means teamwork. It means that railway managements must at all times take the public into their complete confidence.

It means that the public, on the other hand, must respond through a spirit of helpful cooperation and demand of those in charge of administering transportation and communication by legislation, that they exercise their powers in a spirit of constructive helpfulness rather than in a spirit of destructive assertion of authority.

If such a policy of teamwork can be inspired and maintained it is safe to predict that we will enter upon a new era of transportation and communication development. Indeed, this era has already started because there is a changed public attitude, the first expression of which was manifested in the passage of the Transportation Act in 1920. The administration of the Act has not been in full harmony with its spirit, but with a constantly increasing public appreciation of the value of transportation and communication agencies, this situation is bound to improve. As it does improve we may look not only for a new era of intensive improvement and development of existing agencies of transportation and communication, but we may also look for the extension of these agencies into new and undeveloped territory. Much of the vast area of the United States and its possessions is, comparatively speaking, yet undeveloped.

A state of the public mind that will encourage the investment of capital and insure its pro-

\* From an address at the annual meeting of the Chamber of Commerce of the United States at Washington, D. C., May 11, 1928.



tection when invested is bound to result in intensive undertakings looking to the improvement of existing facilities, and also the extension of the various agencies of transportation and communication to new and undeveloped fields.

Teamwork is indispensable if we are to progress and hold our place in the ever increasing competition of world commerce.

## Coast to Coast in 48 Hours

A CO-ORDINATED air and rail line to carry passengers between New York and Los Angeles in 48 hours has been formed under the name of the Transcontinental Air Transport, Inc., a \$5,000,000 corporation with officers and directors from a leading air transportation company, airplane and airplane motor manufacturers, railroads and financial organizations. The line will combine the facilities of the National Air Transport, the Pennsylvania and the Atchison, Topeka & Santa Fe to start with, and possibly other railroads and air lines will add to the services offered by the new organization.

Under the present plan, a passenger will leave the Pennsylvania terminal in New York the evening of one day, arriving at a point in Ohio the following morning, change to a plane there and fly to a point in Missouri or Kansas where a change is made to the Atchison, Topeka & Santa Fe for the second night's trip. The passenger will change the second morning at a point in New Mexico to a plane and arrive in Los Angeles late that afternoon. The points in Ohio and New Mexico at which changes from train to plane will be made have not yet been designated, according to Chester W. Cuthell, chairman of the Air Law Committee of the American Bar Association, and director in the new organization and of the Curtiss Aeroplane & Motor Corp. In Ohio it will be some point between Columbus and the Indiana line. The points selected, according to Mr. Cuthell, will be available cities which provide the best airports in Ohio, Kansas and New Mexico.

Railroad men directly interested in the new corporation are J. L. Eysmans, vice-president in charge of traffic of the Pennsylvania, Daniel M. Scheaffer, chief of passenger transportation, the Pennsylvania, and Fred Harvey, head of the hotel and restaurant organization along the line of the Santa Fe and operator of its dining cars and highway motor coaches.

Both President W. B. Storey of the A. T. & S. F. and President W. W. Atterbury of the Pennsylvania have signified their willingness to co-operate with the new co-ordinated line, according to Mr. Cuthell. W. J. Black, passenger traffic manager of the A. T. & S. F., will be the railroad officer of that road who will actively co-operate with the new air and rail line. General Atterbury issued a statement, May 16, with regard to the Pennsylvania's active co-operation with the Transcontinental Air Transport Line which was as follows:

"The Pennsylvania Railroad has taken this step after careful consideration. Our railroad has become part owner of the Transcontinental Air Transport, Inc., in the belief that the time is ripe for the inauguration of safe and convenient passenger airplane service in this country, in co-ordination with rail facilities. Years of flying and careful research have demonstrated that, with proper maintenance and operation, passenger airplanes of the type to be used by the new company, flying only in day time and over carefully selected and marked routes, can be safely operated.

"Not until we were convinced that a dependable air service could be produced on a sound basis, and that an independent organization had been developed competent to give a safe and satisfactory service, did we feel justified in giving our support to such an enterprise. We feel those conditions are met in the present undertaking and that it will be a forerunner of far-reaching development."

C. M. Keys, president of the newly formed air-rail line, and head of the Curtiss Aeroplane & Motor Corp., and chairman of the board of the National Air Transport, has announced that the board of directors of the Transcontinental Air Transport, Inc., will include the following members: Harold Bixby, president of the Chamber of Commerce of St. Louis; Howard E. Coffin, chairman of the board of National Air Transport of Detroit; J. Cheever Cowdin, of Blair & Co., Inc., of New York; Chester W. Cuthell, chairman of the Air Law Committee of the American Bar Association; Thomas Eastland of Bond & Goodwin & Tucker, Inc., of San Francisco; Julian L. Eysmans, vice-president, traffic, Pennsylvania; Fred Harvey of Kansas City, representing the hotels and restaurants along the Santa Fe route; Paul Henderson of Chicago, vice-president of National Air Transport, Inc.; Richard Hoyt of Hayden, Stone & Co.; Leonard Kennedy, capitalist; C. M. Keys, president of the Curtiss Aeroplane & Motor Co.; Harry B. Knight of Knight, Dysart & Gamble, St. Louis; Charles L. Lawrence, president of Wright Aeronautical Corp.; Walter Marvin of Hemphill, Noyes & Co.; William B. Mayo, chief engineer of the Ford Motor Company; Earle Reynolds, president of National Air Transport, Inc.; Daniel M. Scheaffer, chief of passenger transportation, Pennsylvania; James C. Willson of J. C. Willson & Co., of Louisville, Ky., and William H. Vanderbilt.

The company plans to inaugurate in the near future additional air services, particularly in the Eastern and Middle Western States, connecting the transcontinental route with all principal cities, according to Mr. Keys. He said that among the other routes now being considered is a branch from Chicago to the Twin Cities. St. Louis and Kansas City are expected to be on the transcontinental line, and other western cities will eventually be linked to the line, either by airplane or railroad connection.

The Boeing Air Transport, Inc., operating the air mail route between San Francisco and Chicago, has been invited to enter the Transcontinental Air Transport, Inc., to develop a co-ordinated air and rail route to San Francisco. The Boeing organization has not yet expressed itself as being willing to join in the co-ordinated service.

The \$5,000,000 capital with which the T. A. T. will start business has all been subscribed. It is in no-par common stock and has been purchased by a group headed by Blair & Co., Inc., including the Pennsylvania, National Air Transport, C. M. Keys, J. C. Willson & Co., Hayden, Stone & Co., Knight, Dysart & Gamble, Hemphill, Noyes & Co., Bond & Goodwin & Tucker, Inc., Fred Harvey and William H. Vanderbilt.

It has been stated by officers of the new company that there is a possibility of the new air-rail line starting year-round operation in six or seven months. It is planned to use tri-motored cabin planes with a carrying capacity of at least 12 passengers. The planes will be of American manufacture, but the particular make of plane to be used has not yet been announced.

# Grain Rates in U. S. and Canada

*I. C. C. says it is not in position to say whether grain rates are excessive*

WASHINGTON, D. C.

THE Interstate Commerce Commission on May 16 sent to the Senate a response to the resolution introduced by Senator Walsh, of Montana, which called on it for information concerning relative freight rates on grain in the United States and Canada, stating that the commission has not in its possession information which would enable it to advise "the aggregate amount that would be realized annually by American shippers of wheat and other grains over and above that now realized during any twelve-month period were the rates and freight on such grains on American railroads no higher than they are on Canadian roads for like distances."

The commission points out that certain rates in Canada are lower than rates in the United States because of charter provisions of the Canadian Pacific, in consideration of a land grant and a cash subsidy, and says that without an extended investigation it is extremely difficult to express any opinion of value with respect to the relative rate levels in the two countries. It also points out that a large part of the railroad mileage of Canada is owned by the Canadian government and that the Canadian National in 1925 and 1926 failed to earn its interest.

One of the points made by the commission is that the railways of the United States pay much higher taxes than those of Canada.

Several tables of rate comparisons are given but the commission points out that many conditions must be taken into consideration. It also shows that grain rates in the West have been reduced since 1920 to a greater extent than rates on most other traffic.

## Extracts from Report

Some extracts from the report follow:

The heaviest grain production in Canada is in the western provinces. Reasonably satisfactory comparisons of rates from those provinces to Fort William and Port Arthur, ports on Lake Superior, and to Vancouver, on Puget Sound, with rates from points in the northwestern part of the United States for like distances to Duluth, on Lake Superior, and to American ports on Puget Sound are available. The Canadian rates described are lower, distance for distance, than are the corresponding rates from the northwestern states such as Montana and North Dakota. In the United States, however, grain production is distributed over a large area, such states as Illinois, Minnesota, Kansas, Nebraska, Oklahoma, Texas and many others being heavy producers. It is difficult to make satisfactory comparisons under like conditions of rates on grain produced in parts of the United States other than the northwest with rates on grain produced in the western Canadian provinces. The answer to the third question in the Resolution is dependent upon obtaining satisfactory comparisons of the rates in the respective countries, upon the relative volume of movement from the respective producing sections, the extent to which grain produced in the United States is competitive with grain produced in Canada, and upon the question of whether a reduction in freight rates on grain accrues wholly to the shipper of such grain. Roughly speaking, of a total annual wheat production of approximately 850,000,000 bushels in the United States, only about 250,000,000 bushels is exported, the remaining 600,000,000 being disposed of in this country. The extent to which that part of the grain produced in the United States which is disposed of in the United States is directly competitive with grain produced in Canada is problematical because of the traffic against the entry of Canadian grain into the United States and because the hauls from the western Canadian provinces are so much greater than from many producing regions in the United States.

The rates on grain for export from the western Canadian

provinces to Canadian Atlantic and Pacific ports are lower than the corresponding rates for export from the northwestern part of the United States to American Atlantic and Pacific ports. These rate differences to the Atlantic ports appear to be due directly, and to the Pacific ports indirectly, to certain charter provisions of the Canadian Pacific Railway. That railway was in 1897 granted a charter to build a line from Lethbridge, Canada, through the Crowsnest Pass into British Columbia, and was given a subsidy of \$3,500,000 and a land grant. In return it agreed, among other concessions, to reduce the then existing rates from the western Canadian provinces to Lake Superior ports by 3 cents per 100 pounds, and to maintain such reduced rates in perpetuity unless otherwise authorized by the Canadian Government. Commodity price and freight rate levels both in Canada and the United States, speaking generally, are today much higher than those which prevailed at the time of the Crowsnest Pass agreement.

During the years 1919-1923, the Canadian government permitted the application of grain rates higher than those provided in the Crowsnest Pass agreement but in the latter year it required restoration of the former rates, and the latter are still in effect. Consequently the grain rates from points in western Canada on the Canadian Pacific to ports on Lake Superior are generally on a lower basis than other rates. Using these rates of the Canadian Pacific as a basis, the authorities of Canada have in recent years required the establishment of similar rates also from points on the Canadian National Railway and from branch line points on the Canadian Pacific not in existence in 1897 to Lake Superior ports, and from points on both lines to British Columbia ports on Puget Sound.

Material increases in rates on practically all commodities have been made in the United States since 1917. A general increase approximating 25 per cent was made by the Director General in 1918. Other general increases were authorized by us in 1920 following the passage of the Transportation Act on February 28 of that year, which increases approximated 35 per cent in the area between the Mississippi River and the Rocky Mountains and 25 per cent west thereof. These increases applied to practically all commodities. In 1921 we required that all rates on grain and its products between points west of the Mississippi River be reduced so as to remove one-half of the increase of 1920, and required an additional 10 per cent reduction on coarse grains and their products. In 1922, we required a reduction of 10 per cent in most other rates throughout the country. Grain rates in the west have, therefore, been reduced since 1920 to a greater extent than rates on most other traffic. In 1923, we again investigated grain rates throughout the west, and in our decision rendered July 10, 1924, *Rates and Charges on Grain and Grain Products*, 91 I. C. C. 105, we found the rates in the aggregate not excessive. All rates on grain between points within the western district, which includes all states west of the Mississippi River, also Wisconsin and portions of Illinois, also from points in the western district to all ports in the United States for export, and from all Lake Erie Ports to Atlantic Ports for export, are again in issue before the Commission in Part 7 of our general investigation of the rate structure, Docket 17000, and all rates on grain within southern territory, which embraces all states east of the Mississippi River and south of the Ohio and Potomac Rivers, are in issue in Part 7-A of the same investigation. We cannot properly in advance of our decision express an opinion as to whether any or all of the rates before us in such investigations are or are not excessive. While the increases of 1920 were authorized under the provisions of the act of February 28, 1920, it is certain that even if such act had not become law, material increases in the then existing rates would have been necessary because of increased costs of railway operation. We cannot say whether the increases which would have been permitted had the Transportation Act not been in effect would have been greater or less than those which were permitted in 1920. Under the circumstances we are not in position to say whether or not any of the rates on grain at present in effect are excessive, and consequently we can not answer the second portion of the fourth question which asks to what extent excessive grain rates are attributable to the act of Congress approved February 28, 1920. Traffic moves under somewhat different circumstances in the United States than in Canada. The industries of this country are more diversified in character and much more widely distributed.



buted. The area of Canada is nearly as great as that of the United States, but the number of tons of freight originating in this country is about 13 times as great and there are six times as many miles of railway in this country as in Canada. Without an extended investigation of freight rates in the two countries it is extremely difficult to express any opinion of value with respect to the relative rate levels in the two countries. We have made no such investigation. We have no power to compel representatives of Canadian railroads to appear before us with respect to rates between points in Canada or the conditions which govern such rates. The Canadian railways are not required by law to file with us their tariffs showing rates between points in Canada and such tariffs are not filed with us.

The following table shows certain information with respect to Canadian and American railways for the calendar year 1926:

Item	Canadian Railways	Railways of the United States
Miles of railway operated:		
1st track .....	40,352	249,138
All tracks .....	54,279	394,944**
Capital stock and debt (Millions of dollars) .....	3,561*	21,749
Gross earnings from operation .....	\$493,599,754	\$6,508,678,781
Operating ratio .....	78.9	73.23
Tax accruals .....	\$ 10,783,788	\$ 396,538,002
Net income after interest charges .....	\$ 17,149,890	\$ 883,421,795
Balance to profit and loss .....	\$ 14,496,882	\$ 565,260,110**
Average haul per ton of freight—(miles) .....	325	311
Average receipts per ton-mile (cents) .....	1.043	1.096
Average load per frt. car (tons) .....	22.36	24.96
Average distance each railway carried a passenger (miles) .....	70.3	40.79
Average receipts per passenger-mile (cents) .....	2.71	2.94
Tons of freight originated:		
Products of Agriculture .....	23,548,916	111,787,387
Animals and Products .....	3,131,945	26,243,489
Products of Mines .....	36,746,040	757,703,138
Products of Forests .....	15,265,833	104,850,837
Manufacturers & Miscellaneous .....	26,529,172	335,557,472
Total .....	105,221,906	1,336,142,323

\* Includes Government Loans.

\*\* Class I railways, including 2925 miles extending into Canada.

The above table shows that the average haul per ton of all revenue freight in Canada is not materially different from that in the United States and that the average receipts per ton per mile for hauling such freight are not materially different, the earning in Canada being 1.043 cents as compared with 1.096 cents in the United States. The products of agriculture constitute about 22 per cent of the total tonnage originated in Canada. Similar products constitute but 8.3 per cent of the tonnage originated in the United States although on leading grain carrying roads the percentage is very much greater. As noted above, the rates on grain for export from the western Canadian provinces are lower than the corresponding rates in the United States. It may be that these differences in grain rates explain the comparatively small difference between the respective ton-mile earnings on all revenue freight in Canada as compared with the United States. If so, it would appear that rates other than the grain rates in question are on the average on a level in Canada not materially different from that in the United States. It should be understood, however, that earnings per ton mile depend upon many considerations and that comparison of such earnings do not necessarily reflect relative freight rate levels.

The railroad policies of Canada and the United States are somewhat different. In this country there is private ownership and management of common carriers, and such carriers are wholly dependent upon the revenues derived by them from transportation. Practically all the railroad mileage in Canada is owned by two systems, the Canadian National and the Canadian Pacific. The former embraces most of the weaker and higher-cost lines and is owned by the Government of Canada. In 1925, the Canadian National failed to earn enough to pay the interest on its debt by \$42,197,664; and in 1926, failed to earn its interest by \$29,894,072. The figures for 1927 are not in our possession. These figures do not reflect in full the extent to which the Canadian National failed to earn its operating expenses and a reasonable return upon its investment as the deficits shown do not cover such part of the investment in the Canadian National which is represented by any other form of capital than interest-bearing debt.

In our report entitled *Grain and Grain Products*, 122 I. C. C. 235, issued February 8, 1927, we said at pages 251 and 252:

It is shown of record that the Dominion of Canada aided in the construction of the Canadian Pacific by giving that company \$25,000,000 in cash, 25,000,000 acres of land, certain completed lines of railroad, a monopoly in certain territory for 20 years, and perpetual exemption from taxation by

the Dominion or any Province established after 1881. When construction was completed in 1886 there was scarcely any population along the lines in western Canada. To build up the country and increase the value of its huge land grants the railroad established a low basis of grain rates to Fort William. In 1898 and 1899, as part consideration for further cash subsidies and land grants, pursuant to a contract with the Dominion known as the "Crowsnest Pass Agreement," the Canadian Pacific reduced the rates on grain from all its stations to Fort William 3 cents per 100 pounds. \* \* \* \*

It further appears that in Canada most of the weaker and less prosperous lines are now operated through the Canadian National Railways by the Dominion Government, which bears the burden of the deficiency in return. The Canadian Pacific is thus in a position to charge lower rates than would be possible if rates were made in Canada, as they are in this country, with a view to providing a fair return upon the aggregate value of all railroad property, including the weak lines as well as the strong.

In 1924 the Great Northern with 8,251 miles of track paid more taxes than were paid in that year by all the railroads in Canada, having in excess of 40,000 miles of track. That carrier represents that if its taxes were reduced to the amount per mile paid by the Canadian roads, it could reduce every rate on every commodity on its system 9 per cent and preserve its present net income, and that it "would be glad to carry from the northern end of its North Dakota branches the same rates that are carried on the Canadian lines if it had the subsidies and consideration from this Government that the Canadian lines have from their Government."

The above table shows that for all Canadian railways in 1926 the total tax accruals were \$10,783,788, whereas the tax accruals for railways of the United States in the same year amounted to \$396,538,002. Computed on a per mile of road basis, railway tax accruals in Canada in 1926 were approximately \$267 per mile and in the United States \$1,591 per mile. If the tax accruals in the United States were on the same basis per mile of railroad as in Canada, they would have been approximately \$330,000,000 less.

## Serious Situation as to Western Rates

WASHINGTON, D. C.

THE National Association of Owners of Railroad and Public Utility Securities, which has recently established an office in Washington under the direction of T. P. Artaud, director of research, has issued a statement calling attention to what it calls the serious situation caused by the insistence of certain interests for reductions in grain rates in western territory under the Hoch-Smith resolution, in the face of the low rates already existing in that section. After a discussion of the grain rate hearings which have been in progress for some time, and of the history and purpose of Section 15a and of the Hoch-Smith resolution, the statement says:

"Both the Resolution and Section 15a are a part of the law of the land. The Commission has taken the initiative to comply with the mandate of Congress for lower rates on agricultural products, but has failed to establish the proper rate level in Western territory so as to yield the carriers in that section the prescribed return. The duty to take the initiative applies equally in both cases. The Commission cannot relieve itself of this obligation by saying that the carriers have the right to propose rates. Section 15a specifically provides that the Commission shall 'initiate, modify, establish or adjust' rates so that the carriers will earn a fair return. It is the view of this Association that the Commission should carry out the mandates of the Hoch-Smith resolution; but that it should at the same time increase rates on other commodities to bring about a resulting rate level which will yield the carriers in that section their much needed return."

## Looking Backward

### Fifty Years Ago

The formal opening of the first completed section of the main line of the Canadian Pacific in Ontario took place May 10. The section is 50 miles long from a point on the north shore of Lake Superior, known as Prince Arthur's Landing, to Kaministiquia.—*Railroad Gazette*, May 17, 1878.

The Pittsburgh, Ft. Wayne & Chicago [now part of the Pennsylvania] is putting in a new style of switch, by which the train is moved on or off the main track without the necessity of breaking the rails. This prevents trains from running off the track when the switch is left open.—*Chicago Railway Review*, May 18, 1878.

An ingenious steam plow just introduced on several railways can unload a dirt train of 30 cars in 20 minutes, doing the work of 30 men in about a quarter of the time formerly required. The plow runs on a rail along the middle of each car, parallel to the track, is propelled by an attachment from the engine, and rolls dirt or gravel on each side like snow in front of a snow plow.—*Railway Age*, the issue of May 16, 1878.

### Twenty-Five Years Ago

E. E. Calvin, for the past six years general superintendent of the Oregon Short Line, has been appointed assistant general manager.—*Railway Age*, May 22, 1903.

A chief signal inspection department on the Pennsylvania plan has been organized on the Baltimore & Ohio with F. P. Patenall as chief signal inspector.—*Railway Age*, the issue of May 22, 1903.

At a meeting of the stockholders of the Chicago, Rock Island & Pacific at Des Moines, Iowa, the deal arranged by J. P. Morgan & Co., for the sale of the St. Louis-San Francisco to the Rock Island, was approved. The contract calls for an exchange of \$29,000,000 of Rock Island stock for \$31,000,000 of Frisco stock and the turning over of the entire Frisco system to the Rock Island.—*Railway and Engineering Review*, May 16, 1903.

Again the United States Supreme Court has over-ruled the Interstate Commerce Commission in its construction of the long and short haul rule and has reaffirmed the proposition that railways may be justified in making lower rates to competitive points than are charged for shorter distances to non-competitive places. Citizens of La Grange, Ga., complained that a higher rate was charged on freight from New Orleans to La Grange than to Atlanta, although the distance to the latter place was 78 miles greater.—*Railway Age*, the issue of May 22, 1903.

### Ten Years Ago

W. J. Jackson, receiver of the Chicago & Eastern Illinois, has been placed in charge of operation of the road with the title of president.—*Railway Age*, May 17, 1918.

The report of the Railroad Wage Commission to Director-General McAdoo recommends the awarding of increases on a percentage scale ranging from 43 per cent for employees receiving \$46 a month and under, down to \$1 for those receiving \$249.—*Railway Age*, May 17, 1918.

The New York legislature has passed a law requiring that all new locomotives put into service after this year and all taken into the shop for general repairs after January 1, 1919, be equipped with vestibuled cabs, so constructed as "to attach to the sides of and inclose all openings between the engine cab and the tender."—*Railway Age*, May 17, 1918.

## New Books

*The Missouri Pacific, An Outline History*, by John Leeds Kerr. 50 pages. Paper bound. Published by the Railway Research Society, New York. \$2.50.

The author has written a concise, informative outline history of the Missouri Pacific, the brevity of which lends itself to reading in an hour and, at the same time, covers the story of this pioneer railroad in a satisfactory manner. In five chapters, "Inception and Era of State Aid," "Westward Ho!", "The Gould Rail Empire," "George Gould and the Pacific Gateway," and "Restoration of the Property," Mr. Kerr tells the story of the road from the time when it nearly achieved the distinction of being the first Pacific road, through its struggle during the survival after the Civil War, through its conquering the frontier finally to become a strategic part of the country's transportation system, and down to, and past, the late reorganization.

### Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

#### Books and Pamphlets

*Bibliography on Foreman Training*. Bulletin No. 128 of the Federal Board for Vocational Education, comprising a selected and annotated list of references to recent books, pamphlets and magazine articles. Pub. by U. S. Govt. Print. Off., Washington, D. C., 10 cents.

*By-Products of Railway Accounting*, by Dr. Julius H. Parmelee. Complete text of address an abstract of which was published in last week's *Railway Age*. 12 p. Pub. by Railway Accounting Officers Association, Washington, D. C. Apply.

*Employee Stock Purchase Plans in the United States*. Fourteen railway plans are discussed in this survey of more than three hundred plans that are or have been in effect in this country. 245 p. Pub. by National Industrial Conference Board, Inc., New York City. \$2.50.

*Facts and Figures of the Automobile Industry, 1928 Edition*. "Rail receipts from motor freight," p. 14. "Rail use of trucks and busses" p. 37-44. 96 p. Pub. by National Automobile Chamber of Commerce, New York City. Apply.

*Picturesque Panama—the Panama Railroad—the Panama Canal*, by Jean Sadler Heald. A concise, illustrated account of present-day Panama and its historical background. 126 p. Map. Published by I. L. Maduro, Jr., Panama City, Panama.

*Railway Education in Japan*. Description of opportunities for education and training available for Japanese railway employees. 24 p. Pub. by Traffic Bureau, Department of Railways, Government of Japan. Apply.

#### Periodical Articles

*The Literature of Employee Representation*, by Paul F. Gemmill. A thoughtful review of important books on employee representation published since 1919 outlining important points in each and suggesting points that still need discussion. Quarterly Journal of Economics, May 1928, p. 479-494.

*The Mississippi-Warrior River Barge Service*, by R. W. Harbeson. "... it appears that water lines now are protected fully against rail competition without a corresponding protection for railroads against water competition..." p. 547. Nautical Gazette, April 28, 1928, p. 546-548.

*A Saharan Railway*. Twelve billion francs appropriation for surveys for the Trans-Saharan have been asked for by the French Minister of Public Works. Annalist, May 11, 1928.

*The Trans-Atlantic Radio Telephone*, by G. Stanley Shoup. History and non-technical description of the operation of a recent communication convenience. Commerce Reports, May 14, 1928, p. 338-391.



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## Odds and Ends of Railroading

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The Union Pacific owns a desk which is claimed to be the oldest in railway service. Its history dates back to 1877. It is now used by an inspector in the agent's office at Lincoln, Neb., and has been in service there since 1908.

Among the interesting devices used in employee solicitation is that of R. H. Johnson, secretary to the superintendent of the Chicago, Rock Island & Pacific at Trenton, Mo. All his personal checks carry a stamped inscription, as follows: "This is Rock Island money. Please give us your business."

During the World War, enginehouses near the front line were the particular targets for enemy attack, as many railway men who served abroad have ample cause to remember. But, with the approach of May 29, the tenth anniversary of the bombing of Longuyon, it will also be remembered that the German railroaders sometimes suffered as well. On that date Longuyon, an important railway terminal, was in German hands. American aviators discovered the location of the enginehouse and a bombing squadron went over to see what they could do. The expedition was an entire success, for several bombs made direct hits and blew the enginehouse to bits, together with some 20 locomotives and a number of soldiers.

### Pity the Mormon Husbands!

The Union Pacific recently hauled the first straight carload shipment of hosiery and lingerie ever received in Salt Lake City. It contained 7,613 dozen pairs of silk hosiery and 280 dozen pieces of lingerie, valued at \$123,000.

### Slumber On

The handling of a perplexing and ticklish situation on the Norfolk & Western in Ohio as reported to the roadmaster at Sardinia by one of his section foremen:

"Mr. ...., Roadmaster

"Dear Sir:—

i had a Little miss haping to day, when i was coming hom from ..... just west of ..... cut just after i came threw the cut there was a man laying in the middle of the track. i saw hem and the man on the head end sayed it was a Dog or a sack. it was raining and i was running slow and when I saw the car was Going to stop Right on him i let the car Role over him and we jumpted off to see if he was Ded and the man Raised up and Sayed your Dam car wakened me up this man wasent injured and the car never touched him he was so Drunk the men had to hold him up if there had been a train along Before my car this man would of Been Killed he wouldn't tell me his Name i didnt No him personaly nor None of my men New him But i think his name is ..... can find out ho he is if you want to No his name.

Yours truly

### Flaming Youth in Canada

A regular movie thriller was enacted by railway police on the Canadian Pacific, when they pursued and captured a quartette of young men who had stolen a motor-driven work-car with the intention of making their way to Ottawa. The chase was made in a locomotive. The "desperadoes" decided to seek their fortune on farms in the district of Ottawa. Having no money, they secured a small motor-driven track car and stepped on the gas. They disregarded all signals. As they passed South Junction, some distance from Montreal, a horrified telegraph operator, aware that the boys would run into an oncoming train in a short time, notified headquarters. A locomotive was immediately requisitioned from Outremont yards, and the chase began, four officers accompanying the engine crew. Finding the pace set by the pursuers too hot for them, the fugitives abandoned the little car as they

reached Lachine bridge, 12 miles from Montreal, and took to their heels. The policemen, thinking they were up against a gang of bandits, pulled out their artillery and continued the hunt afoot. The chase went on merrily for two miles, until the hunters captured their prey near St. Constant. The work car was removed from the tracks two minutes before a freight was scheduled to reach that particular spot.

### The Railroads Are Friendly Competitors

Other forms of transportation are finding the railroads friendly competitors. Some time ago, in this department, we related how a train crew had stopped their train to lend a hand to a highway motor coach which was stalled. Evidence of the same helping-hand spirit appeared at the recent meeting of the Railway Accounting Officers' Association when the delegates were asked, and gave, an opinion as to the proper account to which to charge the cost of painting names on station roofs for the guidance of aviators. Lest some may believe that this last is not serious and bona fide, we refer them to page 172 of the 1928 Agenda issued by the Association. The question was raised by Director Wylie of the Bureau of Accounts of the Interstate Commerce Commission.

### The Days of Real Sport

A reporter on the New York *Sun* witnessed a race between two local trains, on the Delaware, Lackawanna & Western and on the Pennsylvania between Jersey City, N. J., and Newark, in the summer of 1878, with the following remarkable result, as reported in the *Railway Age* of July 18, 1878:

"For a moment neither drew a jot ahead of the other. The coaches flew straight as a die, swerving not a hair's breadth either to the right or to the left, striking the roadway only at intervals, flagellating the iron rails with fierce, sharp blows, and seeming bent on striking them in twain. Passengers looked at one another out of their respective windows in an alarmed way. The Delaware & Lackawanna fireman threw open the door of his furnace and gorged it with coal. In response a million sparks flew from the funnel and danced backward, mingling brilliantly with another million out of the funnel of the sounding Pennsylvanian. Both locomotives blazed and roared and the wheels of the cars flying after them ground terrible music out of the iron track and struck fiery blows at every bound. The rival passengers glowered at one another under the fiery veil which the locomotives threw backward.

"When the Delaware & Lackawanna fireman had fed his beast, a louder roar came down from the Pennsylvania iron horse, and it was known that the other fireman had done likewise. The change for a moment was hardly perceptible. It seemed as though, after the manner of racing boats, first one locomotive and then the other was making mortal spurts, drawing for the instant ahead and then falling a jot behind. Like the boats, to the passengers in the Pennsylvania trains, their flying rival seemed at intervals to lift into the air under its terrible impulses, and to fly, unsupported, sheer and clear above the track. The whole locomotive shook and quivered as if a power had been let loose in it which was on the point of bursting it asunder, and the funnel rattled and roared with the mortal gasps which drew upward through it from the tortured interior. But then, as the swirl of the sparks grew thicker and made a marvelous canopy over both trains, passengers saw that the massive Pennsylvania was steadily drawing ahead. A window of the last Delaware & Lackawanna car dropped out of sight, and another and another, until the whole was gone. This performance was gradually continued until the rear car of the Pennsylvania was on a line with the Delaware & Lackawanna locomotive.

"Then the driver of the latter waved his hand after the manner of a defeated man, and the Delaware & Lackawanna train dropped instantly out of sight. A brakeman on the Pennsylvania train said that those Delaware & Lackawanna fellows were awfully conceited, and had to have it taken out of 'em."



PATRICK H. MOYNIHAN, a member of the Illinois Commerce Commission since 1921, has been appointed chairman of the commission by the governor of the state.

BY A VOTE of 40 to 34 the Senate on May 12 adopted an amendment to the tax-reduction bill proposing a reduction in the corporation income tax from 13½ to 12½ per cent, instead of 11½ per cent as provided in the bill as it passed the House.

EMPLOYEES of the St. Louis-San Francisco who have had 20 or more years service with the company will meet in Springfield, Mo., on June 18 and 19 to attend the 1928 reunion of the Frisco Veteran Employees Association. The program of the first day will include a barbecue and field day at Doling park and an entertainment in the evening. Business sessions of the association will be held on the second day and these will be followed by a banquet in the evening.

AT THE ANNUAL MEETING of the Chamber of Commerce of the United States, held at Washington May 8 to 11, Robert T. Lamont, president of the American Steel Foundries, was elected vice-president for the north central division, and Paul Shoup, executive vice-president of the Southern Pacific, was elected vice-president for the western division. F. W. Sargent, president of the Chicago & Northwestern, was elected a director.

A PROTEST against the plan of L. F. Loree for the acquisition of the Kansas City Southern and the St. Louis-Southwestern by the Missouri-Kansas-Texas has been filed with the railroad commission of Texas. The intervenors are the Waco, Beaumont, Trinity & Sabine, the citizens committees of Port Arthur, Tex., and Beaumont and the chambers of commerce of several southeastern Texas towns.

#### Motor Transport Legislation Deferred to Next Session

The House committee on interstate and foreign commerce at a meeting on May 15 decided to defer action until the next session of Congress on proposed legislation for the regulation of motor vehicle transportation. The sub-committee to which was referred the Parker bill recently, on May 12, submitted a report

to the full committee recommending merely a short simple bill providing merely for the requirement that motor coach operators obtain a surety bond.

#### G. N. Wins Tax Suit

The Supreme Court of the State of Washington recently rendered a decision affirming the judgment of the Superior Court of Thurston County and directed the state to pay back to the Great Northern \$5,135, which it had paid as a license and filing tax upon capital stock. The decision declares unconstitutional a statute passed by the legislature in 1925 which provides for a graduated tax upon the capital stock of corporations authorized to do business in the state. The Great Northern after paying the taxes and filing fees for 1926 and 1927 brought suit in Thurston county to recover the amounts paid and the court upheld the railway company. The case was then appealed to the Supreme Court by the state.

#### Government Railway Proposed by Senator Brookhart

A government-owned, but privately-operated, railroad from the Atlantic to the Pacific is proposed by Senator Brookhart, of Iowa, in a bill introduced in the Senate on May 15. It would authorize the Interstate Commerce Commission to acquire by purchase or condemnation existing transportation facilities needed to make up the transcontinental line and to issue government bonds for the purpose. Management of the road would be entrusted to a Federal Railroad Corporation, capitalized at \$1,000,000, the stock of which would be sold to persons skilled in railroad operation. All earnings in excess of 10 per cent would be used to retire the bonds. In addition the commission would be authorized to acquire other railway lines "when it shall deem the same to be in the public interest."

#### Pennsylvania Changes Organization in Western Region

A new regional organization in the Western region of the Pennsylvania was placed in effect on May 16 when that region, comprising the lines west of Sandusky, O., Mansfield, Columbus and Zanesville, was separated into two general

divisions, each in charge of a general superintendent. The nine divisions now included in the Western region were grouped so that the new Northwestern general division, with headquarters at Chicago, will embrace the Chicago Terminal, Ft. Wayne, Logansport, Toledo and Grand Rapids divisions. The new Southwestern general division, with headquarters at Indianapolis, Ind., will include the Columbus, Cincinnati, St. Louis and Indianapolis divisions. There will be no change in the present divisional organization, with a superintendent in charge of each division. An engineer of maintenance of way will have charge of the maintenance work in each general division and the mechanical work in each general division will be handled by a superintendent of motive power.

#### N. P. To Celebrate Opening of Extension

A celebration marking the completion of the extension of the Northern Pacific from Glendive, Mont., to Brockway will be held at Circle on June 2. A special train will be run from Glendive as the first official use to be made of the line. The speakers will include Charles Donnelly, president of the Northern Pacific, Governor J. E. Erickson of Montana and M. L. Wilson of Montana State College. The program will include a pageant, to be known as the "Passing of the West," which will portray the successive stages in the development of eastern Montana since frontier days. Indians from the Fort Peck Indian reservation will take part in the parade, while Senator McCone of Dawson County in whose honor McCone county was named will head the parade in the regalia he wore in the eighties as a government mail carrier on the lower Yellowstone. Among other features will be an old time stage coach, a prairie schooner and floats showing early and modern methods of travel and farming equipment.

#### Steel Postal Car Bill Passed by Senate

The Senate on May 10 passed the bill, S. 2107, providing that after March, 1930, all cars or parts of cars used for railway postoffice service shall be of steel construction and of such style, length, and



character, and furnished in such manner, as shall be required by the Postmaster General, and shall be constructed, fitted up, maintained, heated, lighted, and cleaned by and at the expense of the railroad companies.

The bill was passed as reported by the committee on postoffices and post roads, which had amended the original bill by inserting a proviso that its provisions shall not apply to trains operated upon branch lines, or upon independent short-line railroads, narrow-gauge railroads, or electric railroads. The bill also provides that no railroad company shall be permitted to operate any railway postoffice car which is not equipped with sanitary drinking-water containers and toilet facilities, nor unless such car is regularly and thoroughly cleaned, and that railroad companies shall place railway postoffice cars in stations for use in advance distribution before the departure of trains at such time as may be ordered by the Postmaster General.

### Congressman Hoch Advises the Commission

Representative Hoch, of Kansas, has addressed to the chairman of the Interstate Commerce Commission a letter in reply to one by Milton H. Harrison, president of the National Association of Owners of Railroad Securities, relating to the action to be taken by the commission under section 15a in case it orders reductions in grain and livestock rates in the West under the Hoch-Smith resolution. Mr. Hoch says that the contention that the commission is directed by law to try to allow the railroads a return of 5¾ per cent "ignores entirely" the earlier requirement of the law that rates must be "just and reasonable." Mr. Hoch also expresses some impatience, although he says he appreciates the tremendous task which the commission has, because of the "long delay in reaching action in the livestock and grain cases and the latitude permitted on the question of farm depression." He says that Congress recognized the existence of the agricultural depression three years ago when it passed the Hoch-Smith resolution "and yet three years after the resolution was passed, the commission is still taking testimony on the question of whether or not a farm depression exists" and that this is "only an illustration of the methods which the railroads have used to delay action."

### Bill to Regulate Coal Industry Introduced

The Senate committee on interstate commerce this week concluded a long series of hearings in connection with its investigation of conditions in the bituminous coal fields. The final witnesses were representatives of the Pennsylvania, who denied various charges that had been made by the United Mine Workers to the effect that the Pennsylvania had been in a conspiracy to depress the price of coal. At the conclusion of the hearings Senator Watson, of Indiana, chairman of the committee, introduced a bill prepared by the United Mine Workers to provide for a plan of regulation of the

coal industry by a Bituminous Coal Commission, composed of five members appointed by the President. Among other things the bill would prohibit a new corporation from engaging in the mining or shipping of coal in interstate commerce until it has obtained a license from the commission. It is provided that the commission shall investigate the fuel service of the railroads and make reasonable rules and regulations governing such fuel service to prevent discrimination between coal mines or coal fields. Another provision would prohibit railroads from making connections with bituminous coal mines or tipples without permission from the Interstate Commerce Commission upon approval of the coal commission.

### Cab Curtains Required

The Interstate Commerce Commission on May 11 made public its report in the cab curtain case, on the complaint filed by the Railroad Commission of Wisconsin, following closely the recent proposed report by Special Examiner John L. Rogers, together with an order amending rule 116 of the rules and instructions for the inspection and testing of steam locomotives and tenders to require the equipment of locomotives in certain territories with cab curtains; that unnecessary or excessive openings about locomotive cabs be closed, during the winter months; that oil-burning locomotives do not take air into the firebox from the interior of the cab; and that steam locomotives used in road service have a suitable storm window attached to side cab windows. The intervening petition of the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen and Enginemen had also asked for vestibule cabs, but later it was amended to strike out the reference to vestibule cabs and that subject was not considered in the case.

The rules define the territory in which the additional protection from the weather is to be required, generally the northern half of the United States, but the report by Commissioner McManamy says the territory considered includes regions where extreme conditions are generally encountered and that in those regions the protective equipment specified is less effective than that now provided by certain of the carriers. Therefore, it says, the amendments to the rule should be regarded as minimum requirements which are not intended to take care of the most extreme conditions, but if they are not properly taken care of the matter can again be brought to the commission's attention.

### C. & N. W. Organizes Athletic Association

The Chicago & North Western Railway Athletic Association has recently been organized by employees for the purpose of encouraging clean sports and healthful exercise as a builder of character and health. Approximately 50,000 employees of the system will participate in this organization and it is expected that 1,500 athletes will engage in the Chicago & North Western championship games when they are held in Chicago next August.

Each division of the railroad has been organized as a separate group and is represented by teams in baseball, track, tennis, golf, swimming, trap shooting and other sports. These division teams will compete for the North Western championship and from the division champions will be selected the representative system teams which will compete in games with other railroads.

The officers of the association are: president, G. B. Vilas, general manager; vice-president, Frank Wenter, general claim agent; secretary, H. S. Larimer, land commissioner; and treasurer, Charles Westbrook, assistant general auditor. In addition a general committee has been appointed for each sport. They are headed by: Eugene Clifford, general purchasing agent, baseball; Harry Allstrand, assistant superintendent of motor power and machinery, track and field; R. N. Van Doren, vice-president and general counsel, tennis; William Johnson, freight claim agent, golf; Otto Hallberg, superintendent car service, swimming; Alex LaCombe, assistant to general superintendent, trap shooting; and R. A. Miller, tax commissioner, band. These committees are duplicated on each division of the railway.

### Passes in Canada

Two Conservative members of Parliament in Ottawa last week, W. G. McQuarie of British Columbia and Thomas L. Church of Toronto, made the charge that free transportation was being illegally issued by the railroads of the Dominion to persons not their employees. Mr. Church stated that newspapers are receiving nearly \$400,000 a year in free transportation. On referring to a previous question on the subject in which the Minister of Railways held that an itemized accounting for all advertising expenditures could not be divulged in the public interests, Minister of Railways Dunning said in part:

"The method provided by the Railway Act for the audit of free transportation is clear and definite. The Board of Railway Commissioners is the body that conducts the audit and certifies that the provisions of the act have been complied with. I have on many occasions investigated rumors of the improper issuance of free transportation by both our great railway systems, and I must say that I have never yet had an instance brought to my attention which turned out to be a contravention of the law. My honorable friend makes a direct statement in that regard, and, as minister, I would appreciate it if members who believe that transportation has been issued illegally by either of our great railway companies would bring it to my attention or to the attention of the Board of Railway Commissioners, which, as I have said, is the body responsible for the administration of the Railway Act in regard to free transportation.

"Now, with reference to newspaper transportation, my honorable friend spoke of transportation issued to newspapers as if it were free transportation. No free transportation, Mr. Speaker, is issued to newspapers either by the Canadian Pacific

(Continued on page 1172)

## Operating Statistics of Large Steam Railways—Selected Items for February, 1928, Com

Region, road and year	Average miles of road operated	Train-miles	Locomotive-miles		Car-miles		Ton-miles (thousands)		Average number of locomotives on line					
			Principal and helper	Light	Loaded (thousands)	Per cent loaded	Gross, Excluding locomotive and tender	Net, Revenue and non-revenue	Serv-ice-able	Un-serv-ice-able	Per cent unserv-ice-able	Stores		
New England Region:														
Boston & Albany.....	1928	407	195,025	209,133	22,529	4,727	64.8	244,650	86,809	104	19	15.7	8	
	1927	407	212,031	226,785	24,343	4,482	66.8	234,559	89,816	114	14	11.1	7	
Boston & Maine.....	1928	2,074	412,439	529,242	38,058	11,673	69.0	602,573	229,130	257	64	20.0	20	
	1927	2,085	448,028	511,667	43,083	11,157	69.4	570,245	223,010	281	81	22.4	17	
N. Y., New H. & Hart....	1928	2,130	512,145	562,915	35,146	14,266	66.9	748,987	293,066	328	54	14.0	50	
	1927	2,140	527,037	557,020	39,163	14,066	67.3	749,072	305,848	303	75	19.8	13	
Great Lakes Region:														
Delaware & Hudson.....	1928	875	308,487	414,186	48,244	9,031	63.7	553,161	260,017	245	35	12.6	90	
	1927	875	330,926	450,158	49,727	9,023	61.3	591,877	286,265	254	30	10.4	85	
Del., Lack. & Western....	1928	998	516,729	583,163	64,679	15,892	65.3	904,656	370,982	248	53	17.6	11	
	1927	999	507,366	579,402	67,808	15,880	67.9	893,113	383,661	272	50	15.5	20	
Erie (inc. Chi. & Erie)....	1928	2,317	872,001	957,379	72,288	34,455	63.7	2,036,647	841,080	431	111	20.5	31	
	1927	2,317	956,911	1,061,135	110,152	33,272	64.1	2,056,794	898,281	540	112	17.2	70	
Lehigh Valley .....	1928	1,345	503,621	550,392	62,095	15,372	65.1	877,284	360,369	369	74	16.7	90	
	1927	1,346	532,987	581,909	63,375	15,747	62.8	931,483	398,701	379	67	15.1	54	
Michigan Central .....	1928	1,822	570,649	601,779	20,887	19,200	59.8	1,077,109	360,246	204	88	30.2	25	
	1927	1,820	539,325	559,848	16,607	17,784	60.8	995,343	358,009	244	67	21.6	62	
New York Central.....	1928	6,459	1,994,237	2,228,784	158,315	72,906	59.6	4,483,701	1,845,904	1,070	334	23.8	290	
	1927	6,478	2,036,198	2,357,800	167,030	74,335	61.0	4,710,794	2,088,856	1,100	341	23.7	192	
New York, Chi. & St. L....	1928	1,665	623,392	631,991	7,008	20,274	62.3	1,149,016	430,208	229	53	18.6	59	
	1927	1,665	602,794	607,404	6,497	18,927	63.5	1,067,215	413,766	238	55	18.8	54	
Pere Marquette .....	1928	2,181	386,934	390,329	3,978	10,027	61.0	599,089	247,887	178	42	19.2	27	
	1927	2,181	420,497	427,430	7,585	10,618	61.3	646,596	276,241	183	34	15.6	25	
Pitts. & Lake Erie.....	1928	231	119,686	121,184	1,921	4,022	56.5	344,912	187,701	53	19	26.5	9	
	1927	231	129,241	129,817	1,096	4,411	58.6	357,306	200,194	51	17	25.0	5	
Wabash .....	1928	2,497	759,927	801,576	13,865	22,967	63.8	1,283,966	466,724	313	50	13.7	65	
	1927	2,497	730,563	761,939	12,627	21,428	63.0	1,237,521	469,564	316	58	15.4	48	
Central Eastern Region:														
Baltimore & Ohio.....	1928	5,534	1,817,617	2,141,006	161,556	51,200	60.3	3,413,137	1,572,099	958	281	22.7	125	
	1927	5,541	1,936,076	2,279,589	188,935	53,870	59.7	3,682,028	1,748,149	1,041	226	17.8	46	
Central of New Jersey....	1928	691	235,789	256,792	44,842	6,552	58.4	438,369	204,678	185	32	14.7	46	
	1927	691	240,632	258,930	46,108	6,516	57.8	440,265	209,661	193	34	14.9	12	
Chicago & Eastern Ill....	1928	945	261,682	263,233	3,440	6,588	62.6	421,819	195,853	109	45	29.1	27	
	1927	945	303,746	311,748	4,894	7,731	60.1	517,970	249,055	109	48	30.5	9	
Clev., Cin., Chi. & St. L....	1928	2,373	738,623	765,383	17,944	22,109	61.5	1,447,882	675,543	329	105	24.2	38	
	1927	2,374	757,166	791,133	25,122	22,923	59.8	1,565,416	739,575	343	93	21.3	11	
Elgin, Joliet & Eastern....	1928	461	137,487	147,224	7,488	3,817	61.4	291,940	148,595	80	9	10.0	...	
	1927	461	142,301	150,627	7,093	3,975	60.1	317,510	164,709	85	8	8.7	...	
Long Island .....	1928	396	44,853	51,248	11,522	545	55.2	35,693	13,377	46	12	20.6	...	
	1927	393	39,263	41,164	10,771	497	55.3	32,665	12,308	42	9	17.7	...	
Pennsylvania System .....	1928	10,844	3,756,738	4,228,437	359,647	120,075	62.9	7,844,483	3,570,218	2,808	409	12.7	836	
	1927	10,843	4,510,050	4,950,196	388,692	125,357	61.7	8,490,704	3,967,481	2,868	432	13.1	375	
Reading .....	1928	1,129	571,889	618,688	57,286	15,209	57.7	1,091,969	535,163	315	77	19.6	40	
	1927	1,130	645,806	703,906	71,778	16,390	56.9	1,213,092	611,917	326	69	17.5	22	
Pocahontas Region:														
Chesapeake & Ohio.....	1928	2,717	1,081,333	1,173,798	47,197	34,755	56.3	2,809,617	1,505,814	550	94	14.5	69	
	1927	2,651	1,155,282	1,249,247	50,839	36,651	54.4	3,047,318	1,626,027	555	88	13.6	31	
Norfolk & Western.....	1928	2,231	768,721	922,425	36,917	26,971	59.1	2,235,410	1,173,732	530	51	8.8	144	
	1927	2,232	812,484	990,712	34,743	27,912	58.2	2,341,011	1,250,595	544	57	9.4	95	
Southern Region:														
Atlantic Coast Line.....	1928	5,105	688,637	690,719	10,326	17,121	59.1	986,556	369,288	411	57	12.2	85	
	1927	4,996	779,662	784,558	13,124	20,387	58.5	1,178,750	436,207	429	50	10.4	58	
Central of Georgia.....	1928	1,898	253,589	254,458	6,259	6,235	70.4	336,002	141,182	139	20	12.7	13	
	1927	1,898	281,097	283,472	7,014	7,061	70.9	382,802	168,448	143	20	12.4	12	
Ill. Cent. (inc. Y. & M. V.)	1928	6,595	1,880,986	1,893,843	43,973	50,231	61.6	3,311,185	1,413,850	767	114	12.9	29	
	1927	6,554	1,863,772	1,870,216	42,340	50,803	61.9	3,360,723	1,489,313	807	92	10.2	19	
Louisville & Nashville....	1928	5,061	1,641,267	1,713,882	58,035	33,400	58.5	2,316,878	1,103,640	612	97	13.7	25	
	1927	5,044	1,669,445	1,739,389	59,101	33,727	58.3	2,363,359	1,135,844	598	116	16.3	1	
Seaboard Air Line.....	1928	4,484	533,121	542,128	13,684	13,294	63.8	757,000	292,996	252	64	20.2	9	
	1927	4,237	578,556	591,213	10,433	14,632	63.1	854,342	344,189	243	45	15.5	...	
Southern .....	1928	6,720	1,365,243	1,394,022	30,395	34,404	63.9	1,942,034	782,531	846	110	11.5	89	
	1927	6,718	1,479,167	1,508,385	32,084	35,954	63.6	2,069,782	851,348	847	128	13.1	16	
Northwestern Region:														
Chi. & North Western....	1928	8,463	1,437,377	1,509,993	24,684	34,325	61.9	2,039,122	809,319	810	130	13.8	135	
	1927	8,461	1,414,093	1,467,931	30,949	33,174	61.7	2,008,706	779,581	749	154	17.0	91	
Chi., Milw., St. P. & Pac.	1928	11,249	1,592,076	1,703,991	105,154	45,676	63.5	2,691,667	1,134,784	829	143	14.7	193	
	1927	11,197	1,485,713	1,579,321	93,249	41,505	63.3	2,463,919	1,065,963	796	196	19.8	138	
Chi., St. P., Minn. & Om.	1928	1,724	316,601	338,180	16,158	6,466	66.2	364,612	155,948	157	27	14.6	21	
	1927	1,724	297,130	317,364	15,415	6,004	65.6	336,510	142,150	157	35	18.4	...	
Great Northern .....	1928	8,163	745,510	770,516	44,067	25,726	68.7	1,489,797	674,180	549	123	18.3	138	
	1927	8,164	673,273	698,642	42,501	21,304	68.1	1,218,890	553,422	564	155	21.5	151	
Minn., St. P. & S. Ste. M.	1928	4,358	497,891	510,874	6,624	12,148	67.5	655,712	287,670	224	41	15.6	14	
	1927	4,368	478,160	489,969	4,688	11,217	67.5	607,984	271,354	296	33	9.9	23	
Northern Pacific .....	1928	6,413	731,930	774,539	44,923	24,361	72.3	1,333,457	606,187	456	151	24.9	64	
	1927	6,505	688,966	726,530	39,861	22,011	73.8	1,185,286	550,515	488	151	23.6	110	
Oreg.-Wash. R. R. & Nav.	1928	2,246	182,571	193,820	14,125	5,421	70.4	312,331	142,441	134	12	7.9	7	
	1927	2,164	167,935	177,127	13,813	4,917	73.1	278,578	130,058	140	21	13.2	15	
Central Western Region:														
Atch														



pared with February, 1927, for Roads with Annual Operating Revenues above \$25,000,000.

Region, road and year	Average number of freight cars on line			Per cent un-serv-ice-able	Gross ton-miles per train-hour, ex-cluding locomotive and tender	Gross tons per train, ex-cluding locomotive and tender	Net tons per train	Net tons per loaded car	Net ton-miles per car-day	Car miles per car-day	Net-ton miles per mile of road per day	Pounds of coal per 1,000 gross ton-mile including locomotive and tender	Locomotive miles per loco-motive day
	Home	Foreign	Total										
New England Region:													
Boston & Albany.....1928	3,656	4,702	8,358	6.3	17,970	1,254	445	18.4	358	30.1	7,354	191	64.5
1927	2,733	5,176	7,909	3.1	15,159	1,106	424	20.0	406	30.3	7,881	204	70.1
Boston & Maine.....1928	12,354	10,116	22,470	5.4	16,483	1,461	556	19.6	352	26.0	3,810	132	60.9
1927	13,138	12,267	25,405	6.4	14,036	1,273	498	20.0	314	22.6	3,820	143	84.7
N. Y., New H. & Hart..1928	17,288	15,971	33,259	11.2	19,418	1,463	572	20.5	304	22.1	4,744	129	54.1
1927	21,831	20,144	41,975	18.1	17,734	1,421	580	21.7	260	17.8	5,104	138	56.3
Great Lakes Region:													
Delaware & Hudson.....1928	10,580	5,455	16,035	4.0	21,384	1,793	843	28.8	559	30.5	10,247	158	56.8
1927	9,927	6,198	16,125	4.0	21,542	1,789	865	31.7	634	32.6	11,682	169	62.9
Del., Lack. & Western...1928	18,195	6,666	24,861	4.5	21,804	1,751	718	23.3	515	33.7	12,818	159	74.1
1927	17,279	7,446	24,725	3.5	21,608	1,760	756	24.2	554	33.8	13,712	151	71.7
Erie (inc. Chi. & Erie)..1928	32,030	17,969	49,999	5.5	28,789	2,336	965	24.4	580	37.3	12,518	136	65.5
1927	34,689	22,299	56,988	8.1	24,712	2,149	939	27.0	563	32.5	13,845	138	64.2
Lehigh Valley .....1928	23,888	8,144	32,032	7.1	24,466	1,742	716	23.4	388	25.4	9,236	168	47.7
1927	23,375	9,844	33,219	8.1	23,879	1,748	748	25.3	429	27.0	10,582	168	51.7
Michigan Central .....1928	20,811	14,073	34,884	5.0	29,700	1,888	631	18.8	356	31.7	6,818	121	73.7
1927	18,029	20,080	38,109	3.4	26,552	1,846	664	20.1	335	27.3	7,027	125	66.1
New York Central.....1928	74,777	66,171	140,948	4.6	29,484	2,248	926	25.3	452	29.9	9,855	122	58.6
1927	71,277	72,716	143,993	3.1	27,592	2,314	1,026	28.1	518	30.2	11,516	123	62.6
New York, Chi. & St. L..1928	14,926	10,020	24,946	5.9	25,374	1,843	690	21.2	595	45.0	8,911	119	78.2
1927	13,257	10,522	23,779	5.6	23,849	1,770	686	21.9	621	44.7	8,876	117	74.9
Pere Marquette.....1928	10,979	7,327	18,306	4.3	20,316	1,548	641	24.7	467	31.0	3,920	116	61.8
1927	10,094	8,697	18,791	3.8	18,685	1,538	657	26.0	525	32.9	4,524	117	71.7
Pitts. & Lake Erie.....1928	16,629	6,571	23,200	4.1	31,772	2,882	1,568	46.7	279	10.6	27,987	111	59.3
1927	12,989	8,658	21,647	4.4	28,841	2,765	1,549	45.4	330	12.4	30,890	113	68.8
Wabash .....1928	16,390	11,086	27,476	2.7	27,047	1,690	614	20.3	586	45.1	6,445	140	77.5
1927	15,005	12,934	27,939	2.4	25,156	1,694	643	21.9	600	43.5	6,716	142	73.9
Central Eastern Region:													
Baltimore & Ohio.....1928	76,899	28,630	105,529	4.9	21,563	1,878	865	30.7	514	27.8	9,795	166	64.1
1927	70,052	33,476	103,528	3.5	19,646	1,902	903	32.5	603	31.2	11,267	175	69.6
Central of New Jersey...1928	19,780	10,397	30,177	6.2	20,503	1,859	868	31.2	234	12.8	10,214	158	48.0
1927	18,936	12,548	31,484	4.5	17,562	1,830	871	32.2	238	12.8	10,838	176	48.1
Chicago & Eastern Ill...1928	13,660	3,582	17,242	31.3	23,117	1,612	748	29.7	392	21.0	7,146	147	59.8
1927	12,925	4,977	17,902	24.4	22,032	1,705	820	32.2	497	25.7	9,411	145	71.9
Clev., Cin., Chi. & St. L.1928	23,890	20,121	44,011	3.3	26,363	1,960	915	30.6	529	28.2	9,817	131	62.2
1927	17,423	20,418	37,841	4.7	25,598	2,067	977	32.3	698	36.2	11,130	129	66.8
Elgin, Joliet & Eastern...1928	9,362	7,469	16,831	4.8	15,721	2,123	1,081	38.9	304	12.7	11,125	151	59.9
1927	8,990	7,550	16,540	5.2	15,069	2,231	1,157	41.4	356	14.3	12,772	142	60.6
Long Island .....1928	1,729	4,366	6,095	1.3	4,761	796	298	24.5	76	5.6	1,166	299	37.3
1927	1,718	4,997	6,715	1.4	4,622	832	313	24.8	65	4.8	1,118	356	36.2
Pennsylvania System ....1928	225,128	71,233	296,361	6.2	24,178	2,088	950	29.7	415	22.2	11,353	143	49.2
1927	215,944	77,491	293,435	4.7	20,687	1,883	880	31.6	483	24.7	13,067	142	57.8
Reading .....1928	29,743	11,160	40,903	3.2	21,391	1,909	936	35.2	451	22.2	16,345	169	59.4
1927	26,462	15,731	42,193	2.7	20,676	1,878	948	37.3	518	24.4	19,332	160	70.0
Pocahontas Region:													
Chesapeake & Ohio.....1928	33,659	8,330	41,989	3.3	31,760	2,598	1,393	43.3	1,237	50.7	19,113	105	65.5
1927	30,356	11,983	42,339	3.3	28,789	2,638	1,407	44.4	1,372	56.8	21,906	103	72.3
Norfolk & Western.....1928	32,140	7,610	39,750	1.1	39,237	2,908	1,527	43.5	1,018	39.6	18,138	143	57.0
1927	28,007	8,452	36,459	1.6	36,351	2,881	1,539	44.8	1,225	47.0	20,014	144	61.0
Southern Region:													
Atlantic Coast Line.....1928	25,183	10,388	35,571	5.7	19,123	1,433	536	21.6	358	28.1	2,495	116	51.7
1927	23,746	13,040	36,786	3.0	19,117	1,512	559	21.4	424	33.9	3,118	116	59.5
Central of Georgia.....1928	5,605	4,941	10,546	4.2	18,540	1,325	557	22.6	462	29.0	2,565	149	56.5
1927	5,285	5,648	10,933	3.2	19,133	1,362	599	23.9	550	32.6	3,170	137	63.6
Ill. C. (inc. Y. & M. V.)..1928	44,464	19,210	63,674	6.5	23,726	1,760	752	28.1	766	44.2	7,393	143	75.8
1927	42,606	25,734	68,340	4.7	22,851	1,803	799	29.3	778	42.9	8,116	137	76.0
Louisville & Nashville...1928	44,567	16,332	60,899	9.3	17,020	1,412	672	33.0	625	32.3	7,519	164	86.1
1927	44,425	19,331	63,756	8.8	16,008	1,416	680	33.7	636	32.4	8,043	162	90.0
Seaboard Air Line.....1928	16,812	9,154	25,966	5.4	17,466	1,420	550	22.0	389	27.7	2,253	149	60.7
1927	15,830	11,134	26,964	4.0	17,121	1,477	595	23.5	456	30.7	2,901	142	74.8
Southern .....1928	46,048	19,945	65,993	6.2	18,484	1,422	573	22.7	409	28.1	4,015	171	51.4
1927	46,129	20,828	66,957	5.0	18,102	1,399	576	23.7	454	30.1	4,526	166	56.4
Northwestern Region:													
Chi. & North Western...1928	45,768	26,948	72,716	5.7	17,933	1,419	563	23.5	384	26.3	3,298	149	56.3
1927	47,998	28,232	76,230	6.8	17,569	1,420	551	23.5	365	25.2	3,291	147	59.3
Chi., Mil., St. P. & Pac.1928	49,492	21,299	70,791	3.0	21,619	1,691	713	24.8	553	35.0	3,479	145	64.2
1927	54,330	22,932	77,262	5.3	20,381	1,658	717	25.7	493	30.3	3,400	151	60.2
Chi., St. P., Minn. & Om.1928	2,543	9,306	11,849	8.0	14,494	1,152	493	24.1	454	28.4	3,120	144	66.7
1927	3,164	8,965	12,129	13.6	13,707	1,133	478	23.7	419	27.0	2,946	151	61.8
Great Northern .....1928	41,226	9,685	50,911	6.2	23,612	1,998	844	26.2	457	25.4	2,848	146	41.8
1927	41,744	10,055	51,799	6.6	20,716	1,810	822	26.0	382	21.6	2,421	154	36.8
Minn., St. P. & S. Ste. M.1928	19,590	5,527	25,117	4.0	15,464	1,317	578	23.7	395	24.7	2,276	124	67.3
1927	19,545	5,704	25,249	4.1	14,556	1,272	567	24.2	384	23.5	2,219	131	53.7
Northern Pacific .....1928	37,918	6,860	44,778	7.8	23,446	1,822	828	24.9	467	26.0	3,259	157	46.6
1927	38,145	7,256	45,401	6.9	21,660	1,720	799	25.0	433	23.5	3,022	153	42.9
Oreg.-Wash. R. R. & Nav.1928	8,002	3,533	11,535	7.4	20,529	1,711	780	26.3	426	23.0	2,187	181	49.3
1927	7,223	3,563	10,786	3.7	19,821	1,659	774	26.5	431	22.3	2,146	183	42.3
Central Western Region:													
Atch., Top. & S. Fe. (in-1928	57,898	14,864	72,762	6.2	27,975	1,866	712	22.1	476	32.7	3,337	123	59.2
cluding P. & S. F.)...1927	56,744	19,966	76,710	6.2	25,284	1,826	714	23.4	518	34.8	3,835		

## News of the Week

(Continued from page 1169)

Railway Company or the Canadian National Railways. But for many years before the institution of the Canadian National railway system it had been the practice of the railways to issue transportation to the newspapers in contra account for advertising. That is to say, every newspaper in Canada is from time to time in receipt of an order from the Canadian National or the Canadian Pacific to insert a certain advertisement.

That advertisement is inserted. The newspaper has an account against the railway company.

"With respect to that account the newspaper can draw transportation to an equivalent amount."

### Pullman Employees' No-Accident Campaign

Officers and employees of the Pullman Company are now engaged in their fourth annual safety drive for "no accidents in May." The purpose of these May drives is to impress the importance of safety pre-

cautions upon officers and employees throughout the year by a concerted campaign to avoid accidents resulting in loss of time. Heretofore this concentration of attention of the subject of safety has been directed primarily at the men in the district yards and the repair shops, although the need for the observance of rules for safety have always been impressed on the conductors and porters, but this year's May campaign definitely includes the men employed on trains, and now embraces practically all employees of the company. The campaign of May,

## Operating Revenues and Operating Expenses of Class I Steam Railways in the United States

Compiled from the Monthly Reports of Revenues and Expenses for 185 Steam Railways, including 16 Switching and Terminal Companies.

Item	United States		Eastern District		Pocahontas Region		Southern Region		Western District	
	1928	1927	1928	1927	1928	1927	1928	1927	1928	1927
Average number of miles operated .....	239,656.28	238,792.01	59,398.86	59,461.77	5,621.05	5,617.01	40,025.39	39,619.51	134,610.98	134,093.72
Revenues:										
Freight .....	\$387,739,026	\$406,578,369	\$166,345,826	\$182,873,419	\$19,025,838	\$21,842,438	\$55,271,025	\$57,398,447	\$147,096,337	\$144,464,065
Passenger .....	670,465,538	676,678,833	35,712,257	37,239,579	1,445,541	1,711,034	10,379,720	11,645,660	22,928,020	26,082,560
Mail .....	8,143,155	8,127,837	3,076,056	3,121,934	239,127	233,907	1,238,197	1,194,590	3,589,775	3,577,406
Express .....	12,120,707	12,415,480	5,554,451	6,171,290	290,703	304,593	1,937,862	1,642,718	4,337,691	4,296,879
All other transportation .....	17,003,329	17,468,502	9,487,770	9,813,784	173,435	209,499	1,068,412	1,115,482	6,273,712	6,329,737
Incidental .....	8,893,626	9,685,667	4,403,280	4,865,326	323,856	465,485	1,225,433	1,313,443	2,943,057	3,041,413
Joint facility—Cr. ....	1,181,821	1,067,455	420,421	429,266	9,502	14,254	138,206	148,543	613,692	475,392
Joint facility—Dr. ....	364,304	404,684	128,697	129,566	2,186	1,657	29,471	34,005	203,950	239,456
Ry. operat'g revenues	505,184,898	531,617,459	224,871,364	244,385,032	21,505,816	24,779,553	71,229,384	74,424,878	187,578,334	188,027,996
Expenses:										
Maintenance of way and structures .....	64,102,206	68,670,510	25,527,523	28,512,572	3,158,787	3,153,332	9,298,656	10,015,505	26,117,240	26,989,101
Maintenance of equip'm't .....	101,069,033	109,309,098	47,375,941	52,260,970	4,663,644	5,192,665	13,570,244	14,312,233	35,459,204	37,543,230
Traffic .....	10,317,056	9,823,830	3,866,117	3,560,394	271,135	266,614	1,736,291	1,767,872	4,443,513	4,228,950
Transportation .....	178,145,013	188,203,001	83,861,975	89,887,419	5,752,886	6,427,086	24,034,283	26,006,668	64,495,869	65,881,828
Miscellaneous operat'ns .....	4,469,266	4,583,495	2,098,799	2,090,928	89,208	89,688	612,602	657,834	1,668,657	1,745,045
General .....	16,378,992	16,307,594	7,294,931	7,329,995	614,587	574,285	2,150,783	2,143,417	6,318,691	6,259,897
Transportation for investment—Cr. ....	1,176,864	1,162,887	134,172	240,527	50,508	12,586	112,516	187,702	879,668	722,072
Ry. operat'g expenses	373,304,702	395,734,641	169,891,114	183,401,751	14,499,739	15,691,084	51,290,343	54,715,827	137,623,506	141,925,979
Net revenue from railway operations .....	131,880,196	135,882,818	54,980,250	60,983,281	7,006,077	9,088,469	19,939,041	19,709,051	49,954,828	46,102,017
Railway tax accruals .....	31,373,359	31,577,151	12,658,401	13,007,523	1,669,350	1,808,263	4,521,534	4,343,658	12,524,074	12,417,707
Uncollectible ry. rev'ns. ....	105,330	131,216	47,390	47,402	3,229	4,021	16,652	21,435	38,059	58,358
Ry. operating income .....	109,401,507	104,174,451	42,274,459	47,928,356	5,333,498	7,276,185	15,400,855	15,343,958	37,392,695	33,625,952
Equip't rents—Dr. bal. ....	7,555,202	7,399,164	3,909,201	3,941,814	449,071	449,371	827,281	993,547	3,311,791	2,956,174
Joint facility rent—Dr. balance .....	2,072,146	2,168,529	1,178,113	1,095,611	117,011	124,401	67,176	84,793	709,846	863,724
Net railway operating income .....	90,774,159	94,606,758	37,187,145	42,890,931	5,709,558	7,644,155	14,506,398	14,265,618	33,371,058	29,806,054
Ratio of expenses to revenues (per cent)....	73.89	74.44	75.55	75.05	67.42	63.32	72.01	73.52	73.37	75.48
FOR THREE MONTHS ENDED WITH MARCH, 1928 AND 1927										
Average number of miles operated .....	239,634.04	238,704.64	59,387.70	59,462.69	5,621.01	5,617.00	40,025.16	39,597.57	134,600.17	134,027.38
Revenues:										
Freight .....	1,071,141,891	1,118,759,299	459,646,370	500,053,452	54,447,365	61,827,596	150,969,467	158,421,834	406,078,689	398,456,417
Passenger .....	218,500,230	236,909,368	110,550,449	116,339,647	4,403,528	5,213,415	32,643,788	36,552,666	70,902,465	78,803,640
Mail .....	23,606,864	23,463,378	8,875,643	8,841,677	649,273	621,384	3,556,935	3,510,588	10,525,013	10,489,729
Express .....	29,323,802	30,111,824	13,290,030	14,600,719	717,830	716,324	4,277,301	3,955,012	11,038,641	10,839,769
All other transportation .....	47,652,770	48,632,350	26,540,990	27,145,288	534,440	573,154	2,927,811	3,124,993	17,649,529	17,788,915
Incidental .....	26,760,133	28,767,123	13,575,360	14,716,081	964,062	1,209,490	3,596,317	3,824,395	8,624,394	9,017,157
Joint facility—Cr. ....	3,304,862	3,404,957	1,286,969	1,390,241	33,209	39,327	392,087	440,791	1,592,597	1,534,598
Joint facility—Dr. ....	1,087,393	1,278,416	387,767	400,354	6,673	6,516	90,003	96,519	602,950	775,027
Ry. operat'g revenues	1,419,203,159	1,488,769,883	633,378,044	682,686,751	61,743,034	70,194,174	198,273,703	209,733,760	525,808,378	526,155,198
Expenses:										
Maintenance of way and structures .....	178,841,952	187,395,535	74,261,006	79,328,128	8,986,546	9,223,503	27,020,684	29,150,198	68,573,716	69,693,706
Maintenance of equip'm't .....	293,262,663	314,668,617	136,778,978	151,650,082	13,732,100	15,194,955	39,222,291	40,956,145	103,529,294	106,867,435
Traffic .....	30,737,826	29,318,443	11,390,740	10,708,367	808,846	761,723	5,488,628	5,362,668	13,049,612	12,485,685
Transportation .....	523,586,433	555,491,952	245,884,170	266,963,614	17,139,508	19,037,408	70,361,592	75,304,492	190,201,163	194,186,438
Miscellaneous operat'ns .....	13,446,375	13,692,345	6,360,737	6,421,535	252,666	268,106	1,847,260	1,893,520	4,985,712	5,109,184
General .....	48,501,393	47,992,217	21,662,568	21,964,707	1,848,284	1,646,523	6,280,316	6,266,137	18,710,225	18,114,850
Transportation for investment—Cr. ....	3,176,127	2,989,963	418,889	592,344	88,835	64,866	302,255	542,434	2,366,148	1,790,319
Ry. operat'g expenses	1,085,200,515	1,145,569,146	495,919,310	536,444,089	42,679,115	46,067,352	149,918,516	158,390,726	396,683,574	404,666,979
Net revenue from railway operations .....	334,002,644	343,200,737	137,458,734	146,242,662	19,063,919	24,126,822	48,355,187	51,343,034	129,124,804	121,488,219
Railway tax accruals .....	88,863,780	90,333,020	34,956,662	35,588,993	5,030,232	5,367,389	12,678,074	12,404,581	36,198,812	36,972,057
Uncollectible ry. rev'ns. ....	317,332	350,649	161,350	134,467	5,500	8,089	45,823	53,894	104,659	154,199
Ry. operating income .....	244,821,532	252,517,068	102,340,722	110,519,202	14,028,187	18,751,344	35,631,290	38,884,559	92,821,333	84,361,963
Equip't rents—Dr. bal. ....	21,672,699	20,861,782	11,760,557	11,538,366	41,467,188	41,335,663	2,130,961	2,711,352	9,248,369	7,947,727
Joint facility rent—Dr. balance .....	5,801,812	6,108,447	3,013,044	2,991,749	359,793	319,913	90,355	247,579	2,338,620	2,549,206
Net railway operating income .....	217,347,021	225,546,839	87,567,121	95,989,087	15,135,582	19,767,094	33,409,974	35,925,628	81,234,344	73,865,030
Ratio of expenses to revenues (per cent)....	76.47	76.95	78.30	78.58	69.12	65.63	75.61	75.52	75.44	76.91

<sup>a</sup> Includes \$3,203,707 sleeping and parlor car surcharge. <sup>b</sup> Includes \$3,320,124 sleeping and parlor car surcharge. <sup>c</sup> Includes \$9,532,826 sleeping and parlor car surcharge. <sup>d</sup> Deficit or other reverse items. <sup>e</sup> Includes \$9,654,283 sleeping and parlor car surcharge.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.



1927 showed but nine lost-time accidents in the district yards, agencies and in the five repair shops of the Pullman Company.

Many ingenious devices have been developed to keep the objective before the men during the campaign. Many of the yards are showing a green light on the top of a building or pole to indicate that no accidents have occurred. This sign is to be replaced by one of red if this record is broken. At San Francisco, Calif., a flag was raised on May 1 with the stipulation that it will be placed at half-mast in case of an accident. The cleaners in the Denver, Colo., yards are wearing colored buttons throughout May. Green will be worn as long as the individual has suffered no accident, but if he is detected in any act of carelessness he must wear a red button for the remainder of the month.

At Boston, Mass., a bulletin 6 ft. wide and 4 ft. 6 in. high was mounted on the cleaner's car in view of the employees and the public. This shows a model of a Pullman car 16 in. long on an inclined track leading to a sign reading "100 Per Cent Safety," the car being moved toward the sign after each day when no accidents occur.

### National Oil and Gas Power Meeting

The first national meeting of the Oil and Gas Power Division of the American Society of Mechanical Engineers, and the second annual oil power conference of the Pennsylvania State College, will be held at State College, Pa., June 14, 15 and 16. At the meeting will be an exhibition of oil engines, parts, accessories and equipment, and a working model of a new type of stroboscope. Papers on Diesel and oil engine subjects will be presented by men prominent in these fields.

### Commercial Stocks of Coal on April 1

Consumers' stocks of bituminous coal continued to decline during the first quarter of 1928 and on April 1 amounted to 48,300,000 tons according to a survey by the Bureau of Mines and the Bureau of the Census. On January 1, the date of the last survey, there were 55,500,000 tons in storage. During the month of January there was a net decrease of 4,000,000 tons leaving a balance of 51,500,000 tons on hand on February 1. From February 1 to April 1 stocks were still further reduced by 3,200,000 tons. Thus the total withdrawn from storage between January 1 and April 1 was 7,200,000 tons.

A slight increase in consumption occurred in the first quarter of 1928, reflecting in part the colder weather of mid-winter and in part greater activity in the coal-consuming industries. The average consumption was 10,636,000 tons a week, as against 9,912,000 tons in the last quarter of 1927. In comparison with the first quarter of 1927, however, the consumption showed a decrease of 6.9 per cent.

Exports averaged 199,000 tons a week during the first quarter of 1928, and the total of consumption plus exports was 10,835,000 tons a week.

Stocks of anthracite in retail yards on

April 1 were 7 per cent greater than on April 1, 1926, but 29 per cent less than on the same date a year ago.

Stocks of railroad fuel declined during January and February, but increased slightly in March. From January 1 to March 1 there was a net decrease of 1,165,000 tons. During March, however, 921,000 tons were added to the railroad reserves and the total on hand April 1, as reported by the American Railway Association, was 14,486,000 tons. The stocks on comparable dates in recent years are shown below:

April 1, 1921	9,700,000
April 1, 1922	19,844,000
April 1, 1923	7,385,000
April 1, 1924	18,722,000
April 1, 1925	11,147,000
April 1, 1926	9,090,000
April 1, 1927	22,806,000
January 1, 1928	14,729,000
February 1, 1928	14,074,000
April 1, 1928	14,486,000

### Status of C. N. S. & M. Before I. C. C.

George B. Hild, E. G. Hitt and Joseph Moudry, as individual owners of securities issued by the Chicago North Shore & Milwaukee, and as the executive committee representing the protective committee of holders of securities issued by that company, have filed with the Interstate Commerce Commission a brief in support of their complaint alleging that the company has, since the effective date of Section 20a of the interstate commerce act, without first having obtained authority from the Commission and in violation of that section, issued over \$30,000,000 of securities. The complainants request the commission to make a formal adjudication of the question whether it has jurisdiction over the issuance of securities by the defendant. Hearings were held in Washington on April 10, 11, and 12, 1928. The defendant did not obtain authority of the Interstate Commerce Commission before issuing its securities and claims exemption from the provisions of Section 20a of the act as an interurban electric railway. The complainants say that it is a railroad electrically operated.

The complainants present their case under four heads, proof of any of which, they claim, upholds their contention: (1) that the defendant is a corporation organized for the purpose of engaging in transportation by railroad subject to the interstate commerce act; (2) that the defendant is not a street, suburban, or interurban electric railway within the meaning of Section 20a of the act; (3) that the defendant operates property that constitutes an integral part of the national transportation system of the country; and (4) that defendant is a railroad properly classified with railroads operated by steam power.

The complainants contend that the defendant is a railroad electrically operated and meets the definitions of a railroad laid down by the Interstate Commerce Commission in its various decisions because its freight traffic is largely interstate; that it handles freight in cars capable of being used on steam railroads generally, and in addition handles freight in a special type of car known as mer-

chandise despatch cars, that it serves a wide and populous territory and operates with extensive equipment; that it performs the special services of steam railroads, such as dining car, observation car, and parlor car service in its passenger business; and that it provides baggage service comparable to that of steam roads. They also point out that it handles less-than-carload freight expeditiously in conformance with the new fast freight services of steam railroads and gives door-to-door delivery of such freight; that it exchanges carload freight with its connections; that through passenger tickets are sold from all points on its line to or from points on connecting lines; that it participates in transcontinental and other interstate and intrastate freight and passenger tariffs; that it has a large amount of yard track and sidings in comparison with its main line; that it is incorporated under the general railroad laws and competes with steam roads; that its line is constructed according to standards of steam railroad construction and is comparable with the Chicago & North Western and other competing roads; that it has an extensive traffic organization and in its relation with shippers and consignees it uses the methods generally used by steam roads; that it is a member of steam railroad associations and exchanges passes with steam roads.

### Eighteen-Story "Merchandise Mart" Over North Western Property in Chicago

Plans have been completed for the development of railroad air rights on the north bank of the Chicago river in Chicago by the construction over the tracks of the Chicago & North Western of an 18-story "Merchandise Mart" by Marshall Field & Co., Chicago, at a cost of about \$30,000,000. In connection with the construction of the mart the North Western will occupy the track and basement level as a freight station which will have a capacity about 10 times as great as its present I.C.C. stations in that vicinity. It is expected that a contract for the construction of the mart will be let within 30 days.

The construction of the mart and the freight station have been made possible by the sale by the North Western to Marshall Field & Co., of a fee simple title to 672 lots, consisting of parcels of land, subterranean areas and volumes of air or space, around, below and above its tracks for \$2,500,000. The railroad estimates that the additional value of the transaction to it, through obviating the necessity for the construction of a separate structure for a freight station, is about \$1,500,000. While other air-right developments have been effected through the granting of an easement by the railroad concerned for a stipulated annual rental this sale represents the first actual transfer of title to land and volumes of space for the development of space above railroad property now occupied, and in the future to be occupied, by railroad facilities.

The mart will be constructed on a plot of land bounded by Wells, Kinzie and Orleans streets and the Chicago river. Its total floor area, including a five-story tower, will be about 4,000,000 sq. ft. The mart will have outside dimensions of 770 ft. by 325 ft., the longest frontage being parallel to the river, and will occupy 218,000 sq. ft. of area on one level. Between the building and dock line of the river it is planned to construct a plaza 80 ft. wide. The freight station will occupy an area of 252,000 sq. ft. on the track level, extending beyond the limits of Wells and Orleans streets, parallel to the Chicago river.

The new station will consolidate the l. c. l. outbound and inbound freight facilities of the North Western which have been maintained in the State street and Grand avenue stations. L. c. l. business in that section of the city is now confined to the Grand avenue station, the State street station having been abandoned in anticipation of the construction of the mart. With the location of the new Proviso l. c. l. transfer facilities on the Galena division a direct connection will be provided for trap car service from the new station.

The North Western expenditure for its quarters in the mart, which will include the installation of platforms, tracks, scales and detailed freight house facilities, will be about \$1,500,000. The track layout will include 12 tracks—two through tracks to provide access to industries along the Chicago river east of the station and 10 house tracks. Two of the house tracks will be available as service tracks for the removal of goods to warehouse space in the mart. The North Western also reserves for its own use a basement which will provide limited storage space. The station and mart will have elevator connections with the tracks of the Illinois Tunnel Company.

The capacity of the new l. c. l. station, which will be used for both outbound and inbound traffic, will be about 10,000 tons of freight per day—about 10 times the capacity of the present stations in that vicinity. At the present time the daily capacity of the Grand avenue station, which represents a temporary consolidation of the l. c. l. facilities of that station and the State Street station, is between 800 and 1,000 tons of freight per day.

### Harvard Summer Courses for Railroad Officers

Tentative outlines have been prepared for the railroad courses to be given at the special session for business executives which will be conducted by the Graduate School of Business Administration, Harvard University, beginning July 9 and continuing for six weeks until August 18. The railroad sections will be in charge of Professor William J. Cunningham of Harvard and Professor Winthrop M. Daniels of Yale.

It is planned to rely largely on the case method of instruction in the conduct of the course. Written cases, actual railroad operating problems, will form the basis of

both classroom discussion and written work, while reference will be made of textbooks and other printed material, including the files of the *Railway Age*.

Tentative schedules call for sessions on five days a week—Monday to Friday inclusive, with four class room sessions daily between 8:30 a. m. and 1 p. m. Thus, the afternoon will remain free for reading, the study of cases and written work. It is also planned, in so far as it is practicable, to make inspection trips for the study of terminal and other railroad facilities in Boston or near-by cities.

Admission to the courses will ordinarily be limited to executives and teachers. It is desired to secure men of experience who will be competent to engage in general discussion of problems. The total tuition is \$200, including a \$25 matriculation fee to accompany the application which should be sent to Miss M. B. Fox, secretary, Soldiers Field, Boston, Mass. Rates for room and board at the University are \$115 to \$180 for the term of the sessions.

Following are some of the subjects covered in the tentative outline:

#### ADMINISTRATIVE SECTION (PROFESSOR CUNNINGHAM)

##### Organization

The beginnings of a railroad; economic justification; legal requirements; preliminary organization

##### Financial organization

Economics of location  
General principles of official organization  
Survey of departmental relationships  
Problems of executive control  
The operating and maintenance departments  
The traffic department  
The accounting department  
Railroad labor organizations  
Relations between management and employees  
Comparisons with organization of foreign railroads

##### Operation and maintenance

Economics of maintenance of way  
Economics of maintenance of equipment  
Utilization of locomotives  
Utilization of freight cars  
Utilization of passenger cars  
Utilization of work equipment  
Station design and operation—passenger  
Station design and operation—freight  
Terminal design and operation  
Classification yards  
Standard code of train rules  
Freight train operation  
Passenger train operation  
Train accidents  
Signaling—discussion of types  
Signaling—economics of

##### Accounting and Statistics

Governmental control  
Development of classifications  
Depreciation accounting  
Separation of expenses between classes of service  
Determination of cost of service  
Statistical indices—general  
The operating ratio  
Statistics of maintenance  
Statistics of station and yard operation  
Statistics of train operation  
Budgetary control  
Specific costing problems

##### Motor Transportation

The economic field for the highway motor coach  
The economic field for the highway motor truck  
The economic field for the rail motor car

#### SECTION ON RATES AND REGULATION (PROFESSOR DANIELS)

1. The fundamental economic significance of transportation; the progressive realization of more complete territorial division of labor; resulting enlargement of the general economic income of society.
2. Development of railway transportation in the United States.
3. General principles underlying rates.
4. Survey and general outline of territorial rate structures.
5. Genesis, legal background and growth of governmental regulation.
6. Survey of federal legislation. The original Act of 1887; its weakness; subsequent amendments, 1906, 1910, 1914, 1917. The Transportation Act of 1920; proposed amendments.

7. Valuation and recapture.
8. Consolidation.
9. Financial Structure and related Problems.
10. The operation and functioning of the Interstate Commerce Commission.

### Fuel Association Exhibit

Exhibits of railway equipment and supplies having a bearing on fuel economy were shown by 65 companies at the International Railway Fuel Association convention held at the Hotel Sherman, May 8 to 11 inclusive. This exhibit was displayed under the auspices of the International Railway Supply Men's Association which elected the following officers for the year 1927-28: President, M. K. Tate, Lima Locomotive Works, Lima, Ohio; vice-president, C. Jenista, Barco Manufacturing Company, Chicago; treasurer, L. R. Pyle, Locomotive Firebox Company, Chicago; secretary, S. A. Witt, Detroit Lubricator Company, Chicago; assistant secretary-treasurer, W. J. Dickinson, Railway Publications Service, Chicago. The following is a list of the companies exhibiting, products on display and representatives in attendance:

American Arch Company, New York.—Moving picture "Scene in Action," showing functioning of sectional brick arch. Represented by G. M. Bean, J. D. Brandon, B. A. Clements, E. H. Cook, T. Ferguson, W. Haag, T. Mahar, E. T. Mulcahy, W. W. Neale, C. T. Pfeiffer, G. A. Price, M. R. Smith and A. M. Sucose.

American Locomotive Company, New York.—Three-cylinder locomotive; four-wheel engine truck; steam pipe casing; wrist pin; grease cellar; flexible and rigid staybolts. Represented by Robert Brown, Arthur Haller, Hunter Michaels, W. S. Morris and N. C. Naylor.

American Steel Foundries, Chicago.—Locomotive grate. Represented by C. F. Street.

American Throttle Company, The, New York.—Multiple throttle for locomotives (smokebox type). Represented by R. M. Ostermann.

Argyle Railway Supply Company, Chicago.—Pyropad stoves. Represented by A. H. Green and B. B. Shaw.

Armstrong Machine Works, Three Rivers, Michigan.—Steam traps. Represented by E. L. Hughes, E. J. O'Brien, T. H. Rea, O. E. Ulrich and C. M. White.

Badeker Manufacturing Company, Chicago.—Piston rod and valve stem packing. Represented by Burr R. Alley, Walter H. Bentley and A. N. Willis.

Baldwin Locomotive Works, The, Philadelphia, Pa.—Literature. Represented by W. H. Evans, L. H. Fry, C. H. Gaskill and Charles Riddell.

Barco Manufacturing Company, Chicago.—Flexible joints; lubricated plug valves; engine and tender connections; steam heat connections; power reverse gears. Represented by F. N. Bard, W. J. Behlke, C. O. Jenista, A. S. Lewis, J. L. McLean and C. L. Mellor.

Bethlehem Steel Company, Bethlehem, Pa.—Literature describing auxiliary locomotive. Represented by C. M. Jordan, I. G. Jordan and F. M. Morley.

Bird-Archer Company, The, Chicago.—Model of sludge remover; power blow-off device; blow-off cocks; water treatment chemicals. Represented by J. L. Callahan, J. J. Clifford, S. P. Foster, C. J. McGurn, R. A. Wilsey and L. F. Wilson.

Bradford Corporation, Chicago.—Front end throttle; back head throttle; rocker draft gear; friction draft gear. Represented by E. J. Barnett, A. C. Bodeau, W. C. Doering, J. C. Keene, A. A. Helwig and E. H. Mattingley.

Burnside Steel Foundry Company, Chicago.—Side bearing for locomotive tenders and cars; locomotive coal picks, rakes and grate shaker; bars made of electric steel. Represented by William H. Moore.

Central Alloy Steel Corporation, Massillon, Ohio.—Seamless boiler; tubes and pipe. Irving H. Jones and J. B. Hammond.

Clark Cooper Company, Philadelphia, Pa.—Locomotive air whistle. Represented by Walter H. Bentley, Clark Cooper, and Clark Cooper, Jr.

Clark Manufacturing Company, Philadelphia, Pa.—Jack for parting piston rod from crosshead; frame bolt jack for backing out frame bolts; journal jack and rail hook for bracing cars; jack for connecting tender to locomotive. Represented by H. G. Smith.

Coffin, J. S., Jr., Company, Englewood, N. J.—Feedwater heater system. Represented by



J. S. Coffin, Jr., W. T. Comley, E. L. Schellens, C. W. Wheeler and Paul Willis.  
Consolidated Ashcroft Hancock Company, New York.—Safety valves; cut-off control gages; pressure and vacuum gages; inspirators; boiler testers; water column; boiler checks and valves; and hose strainers and other appliances. Represented by C. D. Allen, C. L. Brown, C. W. Corning and J. P. Walsh.

Cut-off and Speed Recorder Corporation, New York.—Locomotive valve pilot; locomotive recorders. Represented by V. Z. Caracristi, C. F. Pennypacker, R. B. Steward and F. D. Welden.  
Dearborn Chemical Company, Chicago.—Scientific feedwater treatment; rust preventive. Represented by C. G. Baty, F. W. Boatright, I. H. Bowgn, L. P. Bowgn, Robert F. Carr, George R. Carr, H. B. Crocker, N. F. Dunn, Charles M. Hoffman, F. B. Horstmann, C. S. Murray, R. Q. Milnes, J. W. Nutting, H. P. Ross, O. H. Rehmer.

Detroit Lubricator Company, Detroit, Mich.—Locomotive force feed oiler; automatic flange oiler (pendulum type); locomotive lubricators; transfer filler. Represented by W. B. Drake, C. E. Sperry and S. A. Witt.

Dickinson, Inc., Paul, Chicago.—Caboose jacks, camp car jacks; steam exhaust heads, ventilators. Represented by A. E. Engman and A. J. Filkens.

Edna Brass Manufacturing Company, Cincinnati, Ohio.—Mechanical lubricators; air-operated cylinder cock; boiler check for feedwater pumps; water column; gage cocks; oil burners; air manifold. Represented by E. O. Corey, William Beck and F. S. Wilcoxon.

Estate Stove Company, Hamilton, Ohio.—Station and caboose stoves. Represented by Tom Brown and W. P. Whitfield.

Filbert Company, J. A., Chicago.—Incandescent furnace grate. Represented by J. A. Filbert.

Franklin Railway Supply Company, New York.—Descriptive literature on locomotive booster; limited cutoff; tandem main rod drive; butterfly fire door; flexible joint; power reverse gear; driving-box lubricator; radial buffer; grate shaker. Represented by C. J. Buck, C. W. F. Coffin, R. F. DeMott, W. T. Lane, J. L. Randolph, John Talty, S. D. Rosenfelt and Paul Weiler.

Garlock Packing Company, Palmyra, N. Y.—Mechanical packings. Represented by H. J. Ranshaw, S. H. Flannagan and J. F. Francy.  
Gilg, Henry F., Pittsburgh, Pa.—Rolled hollow staybolt steel; tire turning tools. Represented by Henry F. Gilg.

Graham-White Sander Corporation, Roanoke, Va.—Locomotive sanders. Represented by F. H. Smith and W. H. White.

Hennessy Journal Lubricator, New York.—Journal lubricator. Represented by W. L. Gibbs.

Hulson Grate Company, Keokuk, Iowa.—Locomotive grate; tuyere type grate surface. Represented by E. E. Bergman, A. W. Hulson, J. W. Hulson and P. J. Kaveney.

Hunt Spiller Manufacturing Corporation, Boston, Mass.—Gun iron castings for locomotives. Represented by V. W. Ellet, C. L. Galloway, D. F. Hall, F. B. Hartman, E. J. Fuller, F. W. Lampton, J. G. Platt and R. R. Wells.

Hyatt Roller Bearing Company, Harrison, N. J.—Roller bearings, railroad type. Represented by C. M. Burdette, C. A. Johnson, J. C. Narowca and T. A. Russell.

Johns-Manville Corporation, New York.—Insulations; pipe coverings; engineer's tape; blocks, car insulations; packings; high temperature cements; steam traps; radiator control valves; transite asbestos wood. Represented by W. D. Goddard, H. R. Poulson and Thomas O'Leary, Jr.

Lima Locomotive Works, Inc., New York.—Pictures of super-power steam locomotives. Represented by J. E. Long, H. W. Snyder, M. K. Tate and W. H. Winterwood.

Locomotive Finished Material Company, Atchison, Kans.—Sectional cylinder packing rings; sectional packing and bull rings; steel pistons; floating bushing driving box; blow-off muffler. Represented by C. Hastings and R. McIntosh.

Locomotive Firebox Company, Chicago.—Thermic syphons; boiler and firebox models. Represented by John Baker, Fred Bromley, R. L. Belknap, W. S. Carr, B. E. Larson, Thomas Klein, L. R. Pyle, E. J. Reardon, C. M. Rogers, C. A. Seley and A. M. Wheeler.

MacLean-Fogg Lock Nut Company, Chicago.—Lock nuts, speed nuts and unit nuts. Represented by J. W. Fogg and J. A. MacLean.

Madison-Kipp Corporation, Madison, Wis.—Locomotive lubricator, with fluid pressure check valve. Represented by F. L. Clark and A. H. Flanagan.

Miner, Inc., W. H., Chicago.—Friction draft gear; side bearings; locking center pins. Represented by A. E. Biddle, A. G. Peterson, F. O'Connor and W. E. Robertson.

Mudge & Company, Chicago.—Security unit spark arrester for old or new power. Represented by C. P. Benning.

Nathan Manufacturing Company, New York.—Mechanical lubricators; hydrostatic lubricators; low water alarm; water column; boiler checks; injectors. Represented by C. J. Banning, F. C.

Davern, F. Ehredt, J. A. Kelly, F. E. Marsh, T. J. Murphy and R. Welsh.

National Railway Devices Company, Chicago.—Radial fire-door. Represented by E. J. Gunnison, Steve Ord and J. G. Robinson.

Ohio Injector Company, Chicago, Ill.—Low-water alarm; fire jet; boiler check and stop valve; water glass protector; lubricator; non-lifting injectors. Represented by A. C. Beckwith, W. H. Malone and C. C. Sourberg.

Okadee Company, The, Chicago.—Blow-off valves; front end hinge; tender hose coupler; water glass protector; cylinder cock; washout valve; drain valves. Represented by G. P. Dirth, W. H. Heckman, A. G. Hollingshead, J. J. Melley, J. M. Monroe, J. S. Lemley, C. R. Long, Jr., M. H. Oakes and C. W. Ploen.

Permutit Company, New York.—Water softener and filtration plant for treatment of locomotive boiler feed water and stationary boiler feed water. Represented by I. J. Bready, J. R. Crocker, F. S. Dunham and H. P. Sherwood.

Pilliod Company, New York.—Valve gear and locomotive back pressure control. Represented by W. H. Bellmaine, J. H. Cooper, Frank Fisher and Frank H. Lutz.

Pilot Packing Company, Chicago.—Packing. Represented by Joseph Sinkler.

Pilbrico Jointless Firebrick Company, Chicago.—Jointless furnace lining; boiler model showing typical installation with monolithic refractory lining without joints. Represented by J. E. Anderson.

The Pyle-National Company, Chicago.—Turbo generators; locomotive headlights; floodlights; safety switches; classification and marker lamps; plugs and receptacles; hand lamps; train connectors. Represented by J. A. Amos, J. V. Baker, W. T. Bretherton, G. E. Haas, J. Will Johnson, C. P. McGinnis, William Miller, W. A. Ross and W. A. Smith.

Railway Motors Corporation, DePere, Wis.—Roller journal bearings. Represented by R. Frame, L. W. Melcher and W. S. Nordby.

Railway Purchases & Stores, Chicago.—Magazines. Represented by H. B. Kirkland, K. F. Sherman and Edward Wray.

Roberts & Schaefer Company, Chicago.—Side-cut non-skim locomotive coaling gate and apron fixture. Represented by David E. White.

Sargent Company, Chicago.—Three-face water gage; water glass protectors; water columns complete with fittings; two-seat gage cocks; blower valve; safety gaskets; locomotive steam gages. Represented by Louis L. Schultz.

International Correspondence Schools, Scranton, Pa.—Lesson papers; advertising material. Represented by H. T. Pollinger and Ed. M. Sawyer.

Wm. Sellers & Company, Inc., Philadelphia, Pa.—Complete feedwater heater injector equipment; live steam non-lifting injector with operating lever valve; coal sprinkler. Represented by John B. Davis, John D. McClintock and P. E. Raymond.

Simmons-Boardman Publishing Company, New York.—Copies of Railway Age and Railway Mechanical Engineer. Represented by R. F. Dusters, H. A. Morrison, J. Rutherford and E. L. Woodward.

Standard Stoker Company, Inc., Chicago.—Standard stoker seen in action; photographs and other descriptive material. Represented by C. Wilker, C. T. Hansen, H. Mann, F. P. Roesch, L. Sweeney, A. L. Whipple and W. Chenault.

The Superheater Company, New York.—Feed-water heater; exhaust steam injector; repaired superheater units. Represented by E. A. Averill, Bard Browne, George Fogg, W. B. Grove, A. C. Lachlann, R. R. Porterfield, G. E. Ryder, K. E. Stilwell, C. H. True and R. J. Van Meter.

The Texas Company, Chicago.—Railway lubricants. Represented by F. S. Freeman, J. E. Haskins, J. M. P. McCraven, C. J. Quinn, J. F. Ryan, J. E. Vrooman, E. Wegner and J. H. Wood.

Union Asbestos & Rubber Co., Chicago.—Asbestos products. J. H. Kuhns and O. J. Rudolph.

Universal Packing and Service Company, Chicago.—Spring journal box packing. Represented by W. H. Davis, W. M. Gibbs, J. D. Herr, J. P. Laudreth and L. A. Rowe.

Viloco Railway Equipment Company, Chicago.—Sander; vacuum bell ringer; floating journal bearing and hub liner combined; exhaust pipe (brake booster); pneumatic whistle operator; rail washer; grease lubricator for piston rods and valve stems. Represented by G. P. Dirth, W. H. Heckman, A. G. Hollingshead, J. S. Lemley, Charles R. Long, Jr., J. J. Melley, J. M. Monroe, M. H. Oakes and C. W. Ploen.

Whiting Corporation, Whiting, Ind.—Literature describing drop tables and locomotive hoists; stokers; gantry cranes; traveling cranes. Represented by Hugh K. Christie.

Worthington Pump & Machinery Corporation, New York.—Locomotive feedwater heater. Represented by J. E. Barbar, S. L. Brownlee, J. E. Buckingham, J. W. Coakley, D. R. Coleman, J. P. Collins, J. F. Cosgrave, A. R. Dawson, C. E. Keever, R. G. Kelly, George Law, J. M. Lammedee, T. E. McGowan, F. F. Murray, T. C. McBride, R. H. Rainey and James A. Wilson.

## Traffic

At a recent meeting of the Traffic Club of St. Louis, the following officers were elected for the ensuing year: President, J. N. Cornatzar, passenger traffic manager of the St. Louis-San Francisco; and vice-presidents, Edward Clemens, traffic manager of the Terminal Railroad Association, and C. P. Bowsher, division freight agent of the Missouri-Kansas-Texas.

The Interstate Commerce Commission, on petition of southeastern and Carolina carriers, has ordered an investigation into the reasonableness and propriety of the rates on salt, in carloads, from producing points in Louisiana, Ohio, Michigan, Kansas, West Virginia, New York, and Chicago, to points in southern territory and between points in southern territory, including rates from the ports.

On petition of the Atlantic Coast Line and other carriers the Interstate Commerce Commission has instituted a proceeding of investigation as to the relation between rates on fertilizers and fertilizer materials, required by the State Corporation Commission of Virginia to be maintained by railroads operating within the state, and the interstate rates. On February 17 the Virginia commission ordered the railroads to establish a scale of rates on fertilizers for distances of 40 miles and under and a scale of rates on fertilizer materials for all distances, which are less than rates permitted or required to be established by the Interstate Commerce Commission for interstate traffic.

The Interstate Commerce Commission has made public a proposed report by Examiner S. A. Aplin recommending a finding, on the complaint filed by the Inland Waterways Corporation, that the divisions claimed by the railroads out of the joint rail-barge-rail rates between Fargo, N. D., and points in Illinois, Indiana, Iowa and Missouri, in connection with the government barge line, are unjust, unreasonable and inequitable. The examiner says that equitable divisions will be arrived at by a rate prorate basis, using as factors the first-class rail rate between the inland point and Dubuque, Ia., the first-class barge rate between Dubuque and the Twin Cities, and the first-class rail rate between the Twin Cities and Fargo.

## New Reductions in Lake Cargo Coal Rates Proposed

Following a series of conferences between officers of the railroads serving the "northern" and "southern" coal districts and coal operators of those districts in an effort to bring about a compromise in the lake cargo rate situation, the railroads serving the Pennsylvania and Ohio coal fields have announced their intention of filing with the Interstate Commerce Commission by May 18 tariffs reducing the rates from the Pittsburgh, Ohio No. 8 and Cambridge districts by 20 cents a ton,

to meet the similar reduction which became effective on April 20 from the southern district, after the court at Charleston, W. Va., had enjoined the commission's order which held the reduction to be not justified.

The reduction from the southern district was made to meet those ordered by the commission from Pennsylvania and Ohio, which became effective last August, and had the effect of reducing from 45 to 25 cents the differential under the northern rates which the commission had attempted to establish. The commission ordered reductions from \$1.66 and \$1.63 a ton to \$1.46 and \$1.43, whereupon the southern roads filed tariffs reducing their rates from \$1.94 and \$1.91 to \$1.74 and \$1.71. The new reduction now proposed by the northern roads is to \$1.26 and \$1.23, which would restore the 45-cent differential.

At conferences held in New York and Cincinnati executives of the roads involved had sought to bring about a compromise on the basis of a 35-cent differential in the rates between the two competing fields, but the coal operators declined to assent.

Daniel Willard, president of the Baltimore & Ohio, P. E. Crowley, president of the New York Central, W. W. Atterbury, president of the Pennsylvania, and W. M. Duncan, chairman of the Wheeling & Lake Erie, conferred informally with members of the Interstate Commerce Commission at Washington on May 11, in an effort, it is understood, to ascertain the views of the commission as to what should be done to prevent a possible "rate war," but the commissioners took the position that they could not give any advice in view of the fact that the question of the commission's power to prevent the reduction from the southern district is involved in court proceedings. An appeal is to be taken to the Supreme Court of the United States from the order of the lower court enjoining the commission's order.

On the following day announcement was made in New York and Cleveland that the Baltimore & Ohio, New York Central, Pennsylvania, Pittsburgh & Lake Erie, Wheeling & Lake Erie and their connections would reduce their rates by 20 cents from the Pennsylvania and Ohio mines to lake ports on shipments destined to points west of the Detroit river, and later announcement was made that the tariffs would be filed to become effective on June 18, expiring by limitation at the end of the year.

Predictions were made for a time that unless the commission suspended the tariffs the Chesapeake & Ohio and other southern roads would meet the reduction by a new cut in their rates, thus precipitating a rate war, but it is understood that it is hoped that the entire matter may again be brought before the commission for adjustment in a single proceeding.

The commission has issued sixth section permission orders permitting the Baltimore & Ohio and New York Central to reduce their rates from the Kanawha district 20 cents a ton to correspond with the reductions made from the other southern mines.

## Equipment and Supplies

### Locomotives

THE MISSOURI PACIFIC is inquiring for 5, 2-8-4 type locomotives.

THE BOSTON & MAINE is inquiring for 2 eight-wheel switching locomotives.

THE FERROCARRIL DE PACIFICO (COLOMBIA) has ordered 10, 4-8-0 type locomotives, from the Baldwin Locomotive Works.

THE WEYERHAEUSER TIMBER COMPANY has ordered 1 2-6-6-2 type locomotive, from the Baldwin Locomotive Works.

THE FERROCARRIL DE ANTIOQUIA (COLOMBIA) has ordered 4 Mikado type locomotives, from the Baldwin Locomotive Works.

THE ERIE has ordered 35, 2-8-4 type locomotives from the Baldwin Locomotive Works. Inquiry for this equipment was reported in the *Railway Age* of April 28.

### Freight Cars

THE BOSTON & ALBANY is making repairs to a number of freight cars in its own shops.

THE HAINESPORT MINING & TRANSPORTATION Co. has ordered 4 steel hopper cars of 50 tons' capacity from the American Car & Foundry Co.

THE NORTH AMERICAN CAR COMPANY is inquiring for from 50 to 100 steel underframes to be used in making repairs to refrigerator cars, the work to be carried out in the company shops.

THE VIRGINIAN has ordered 1,000 hopper car bodies of 57½ tons' capacity from the Virginia Bridge & Iron Co. Inquiry for this equipment was reported in the *Railway Age* of May 5.

### Passenger Cars

THE CENTRAL OF BRAZIL has ordered 8 sleeping cars, 2 buffet baggage cars and 10 steel passenger cars from the American Car & Foundry Co.

THE BALTIMORE & OHIO has ordered 10 combination baggage and mail cars from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of April 14.

THE CHICAGO SOUTH SHORE AND SOUTH BEND has ordered 10 rail motor cars from the Standard Steel Car Co. Inquiry for this equipment was reported in the *Railway Age* of April 28.

THE NORTHERN PACIFIC has ordered three gas electric rail motor cars from the Standard Steel Car Company and one from the J. G. Brill Company. Inquiry for this equipment was reported in the *Railway Age* of March 3.

### Machinery and Tools

THE MISSOURI-KANSAS-TEXAS is inquiring for one 90-in. driving wheel lathe with crank pin quartering attachment.

THE BOSTON & ALBANY is inquiring for a universal automatic grinder and a single end shear.

THE ERIE is inquiring for a milling machine, a turret lathe and some heavy tools.

THE OREGON SHORT LINE has ordered a lathe from Manning, Maxwell & Moore, Inc.

THE MISSOURI-KANSAS-TEXAS has ordered a journal turning lathe from Manning, Maxwell & Moore, Inc.

THE ST. LOUIS SOUTHWESTERN has ordered an axle lathe from Manning, Maxwell & Moore, Inc.

THE NILES-BEMENT-POND COMPANY has received orders from railroads for a Ransom No. 109 grinder; a six-foot plain, right drive, radial drill; and a No. 8B Williams pipe machine.

### Signaling

THE SOUTHERN PACIFIC has placed orders with the Union Switch & Signal Company for direct-current automatic block signaling materials to be installed between Flatonia and Giddens, Texas, a distance of 38 miles. A total of 47 one-arm, and 12 two-arm style B signals, 100 neutral relays, 37 switch circuit controllers, etc., are required. The field construction work will be carried out by the railroad company's signal department force.



The Proposed Reading Passenger Terminal at Philadelphia, Pa.



## Supply Trade

**J. L. Terry**, for many years with **The Q & C Company** at St. Louis, Mo., in charge of the southwestern territory, has been elected vice-president in charge of sales, with headquarters at Chicago.

**The Zeitler Gas Car & Locomotive Co.**, has moved its office from 20 West Jackson boulevard, to 407 S. Dearborn street, Chicago.

**The American Lead Pencil Company** has moved its executive office from 220 Fifth avenue, New York City, to 500 Willow avenue, Hoboken, N. J. The company's sales room at 220 Fifth avenue, New York, will be continued under the direction of a sales manager.

**The Linde Air Products Company**, New York, has opened a new district sales office at 48 West McLemore avenue, Memphis, Tenn. **H. N. Smith** is district manager in charge of the new office.

**Henry C. McEldowney**, president of the Union Savings Bank and the Union Trust Company, of Pittsburgh, Pa., has been elected a director of the **General Electric Company**, Schenectady, N. Y.

**K. J. Burns**, representative of the **Youngstown Sheet & Tube Company**, has been promoted to district sales agent in charge of the Youngstown, O., district sales office, to succeed **Myron S. Curtis**, resigned.

**The Truscon Steel Company**, Youngstown, Ohio, has purchased the **Hydraulic Pressed Steel Company**, Cleveland, Ohio, and will operate it as its pressed steel division. The entire plant is being completely modernized, and full productive capacity will be available shortly.

**E. D. Pike**, who has been in charge of the Pacific Coast Service operation of the **Wagner Electric Corporation**, St. Louis, Mo., with headquarters at San Francisco, Cal., has been promoted to manager of the San Francisco branch sales office.

**H. S. Brautigam**, formerly assistant to master car builder of the Chicago, Milwaukee & St. Paul, has been appointed district representative in the southwest, with office at 501 Shell building, St. Louis, Mo., for the **Allegheny Steel Company**, Brackenridge, Pa. Mr. Brautigam is the author of the book "United States Safety Appliances."

**The National Aluminate Corporation**, Chicago, has taken over the business of the **Aluminate Sales Corporation**, Chicago, and the **Chicago Chemical Company**. The officers of the new company are chairman of the board, **Arthur Meeker**, formerly president Aluminate Sales Corporation; president, **H. A. Kern**, formerly secretary-treasurer, Chicago Chemical Company; vice-president, **P. W. Evans**, formerly secretary-treasurer, Aluminate Sales Corporation and secretary-treasurer, **H. A. Young**, formerly office manager, Chicago Chemical Company.

**The Afco Products Company**, manufacturer of a scale and rust remover and preventive, has moved its main office from New Haven, Conn., to 11 West Forty-second street, New York City. **Charles Q. Sherman**, president, **E. Horace Hawthorne**, sales manager in charge of the automotive division and **Harry L. Payne**, in charge of the industrial division, are located at the New York office.

## Construction

**BALTIMORE & OHIO.**—This company receives bids until May 22 for the construction of water treating plants at Griffiths, Pa., Layton and Wildwood.

**CANADIAN PACIFIC.**—This company closed bids on May 16 for the construction of 10 pile and frame trestle bridges on its Swift Current Northwesterly branch between Willingdon, Alta., and Strathcona.

**CHICAGO, BURLINGTON & QUINCY.**—A contract has been let to the **T. S. Leake Construction Company**, Chicago, for the construction of three cinder pits, two inspection pits and seven wash tables at Western avenue and Sixteenth street, Chicago.

**CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.**—This company plans the elevation of its line between Church and Central streets, Evanston, Ill., which is used by

the Chicago, North Shore & Milwaukee. The project will involve the construction of an earth embankment, with retaining walls, and bridges spanning about 15 street subways within a distance of about 6,000 ft. The cost of the work is estimated at \$2,500,000.

**MOUND CITY & EASTERN.**—This company has been authorized by the Interstate Commerce Commission to construct a line 66 miles long between Mound City and Leola, S. D. The cost is estimated to be approximately \$12,000 a mile.

**PENNSYLVANIA.**—A contract has been let to the **Mellon Construction Company**, Pittsburgh, Pa., for the construction of a bridge east of Reelsville, Ind., which will be made up of four spans, each 26 ft. long; a 34-span reinforced concrete pile trestle east of Vandalia, Ill.; and three bridges east of Mulberry Grove, Ill. The three bridges near Mulberry Grove will

be a 32-ft. slab deck bridge over a highway, a four-span 50-ft. deck plate girder bridge, across Hurricane creek and a 65-ft. deck plate girder bridge across Owl creek, all three of which will be built with substructures for future second track. A contract for the construction of a 60-ft. deck plate girder bridge east of Vandalia has been awarded to the **T. A. Foley Company**, Pittsburgh. Company forces will construct a two-span deck girder bridge with a total length of 156 ft. over White Lick creek east of Cartersburg, Ind. The total cost of the seven bridges will be about \$355,000.

**PENNSYLVANIA.**—This road has authorized an expenditure of \$5,000,000 for the construction of a freight and produce terminal at Pittsburgh, along the Allegheny river from 11th to 24th street. In connection with this work, the **John F. Casey Company**, Pittsburgh, Pa., has been awarded the contract for grading, sewer and track work between 13th and 16th streets and storage track between 43rd and 48th streets at a cost of \$100,000. Included in the new project will be a produce holdout yard at 48th street, together with separate inbound and outbound houses of brick and concrete, fronting 800 ft. in length on 11th street. The produce facilities, extending from 13th to 24th street, are planned to include a combined fruit auction and general sales building of brick and concrete with provision also for future extension beyond the 100 ft. by 1,200 ft. dimensions now proposed. House tracks for 112 cars, team tracks to care for 449 cars of bulk freight and inspection tracks with a capacity of 317 cars, are also to be constructed. The holdout yard at 48th street will have tracks for 445 cars. All modern equipment for serving the trade is planned for the produce building and its auction rooms.

**TEXARKANA UNION STATION.**—Officers of the Union Station Trust have announced that the date of the awarding of the contract for the construction of a union passenger station at Texarkana, Ark., has been postponed until May 16. The station will occupy a site which will place part of the building in Arkansas and part in Texas. The total cost is estimated at \$1,700,000.

**UNION PACIFIC.**—Present plans of this railroad for 1928 call for the construction of new water treating plants at North Platte, Neb., Bitter Creek, Wyo., and Manhattan, Kan. The water softener at Manhattan will be of the zeolite type. Existing water treating plants at Schuyler, Neb., Kearney and Kimball and Dorrance, Kan., will be remodeled and enlarged. The total expenditure for water treating plants will be about \$90,000. A contract has been awarded to the **T. W. Snow Construction Company**, Chicago, for the furnishing of material and equipment required for the construction of coaling stations of 50 tons capacity each at Gering, Neb., and Yoder, Wyo., and Albin. A contract covering the construction of 4 stations, 11 sections houses, 7 bunk houses and 26 minor roadway buildings on the North Platte cut-off between Creighton, Wyo., and Egbert, has been let to **W. Boyd Jones**, Omaha, Neb.

## Financial

**ALBANY PASSENGER TERMINAL.—Stock.**—The Interstate Commerce Commission has authorized this company to issue \$11,400 of stock, \$100 par, to reimburse itself for improvements to existing facilities.

**ATCHISON, TOPEKA & SANTA FE.—Abandonment.**—The Interstate Commerce Commission has authorized this company to abandon its line between Pueblo, Colo., and Portland and to operate over the line of the Denver & Rio Grande between those points. This is a modification of an earlier order made to permit the Santa Fe to restore its own line between these points without further authorization from the commission, should it cease at any time to operate over the D. & R. G. W.

**BOSTON & MAINE.—Equipment Trust Certificates.**—This company has applied to the Interstate Commerce Commission for authority for an issue of \$1,875,000 of equipment trust certificates, to be sold at 100.29 to the First National Bank of New York, the Atlantic National Bank of Boston, and Edward Lowber Stokes & Co., of Boston, the highest bidders.

**CANADIAN PACIFIC.—Purchase of Lacombe & North Western.**—The Canadian Pacific has given its check for \$1,510,582.59 to the Provincial Treasurer of Alberta in payment for the government railroad, including the capital stock of its land company subsidiary.

**CENTRAL OF ARKANSAS.—Abandonment.**—This company has applied to the Interstate Commerce Commission for authority to abandon that part of its line from Plainview to Fourche Junction, Ark., 4.2 miles.

**CHICAGO & EASTERN ILLINOIS.—New Director.**—Joseph B. Graham has been elected a director of the Chicago & Eastern Illinois, succeeding F. H. Ecker, resigned.

**CHICAGO PRODUCE TERMINAL.—Organization.**—This company has applied to the Interstate Commerce Commission for authority to issue \$12,000,000 of stock and for a certificate authorizing it to construct a terminal railroad and facilities for the handling of fruit, vegetable and produce traffic, entering Chicago over all railroads, including a yard with approximately 46 miles of track. The company is to acquire lands previously owned by the Atchison, Topeka & Santa Fe and the Illinois Central, which have applied for authority to acquire control of the company by subscribing to the stock, but which have entered into an agreement to offer to any Chicago railroad an opportunity to participate in the ownership on equal terms. The proposed terminal is to extend from a point between the channels of the Sanitary District of Chicago and the Illinois and Michigan canal, west of Western avenue, to Ashland avenue between West Thirty-First street and

the west fork of the south branch of the Chicago river.

**CHICAGO, ROCK ISLAND & PACIFIC.—Oklahoma City Terminal.**—The Interstate Commerce Commission has authorized this company to abandon a portion of its existing line (Choctaw, Oklahoma & Gulf) in Oklahoma City and to construct a new line to bring it into a new station to be built by it for use by itself and the St. Louis-San Francisco.

**CONNORVILLE & LAKE SUPERIOR.—Denial of Certificate Recommended.**—Examiner O. D. Weed has reported to the Interstate Commerce Commission on the application of this company for a certificate to operate in interstate commerce a 3-mile line in Gogebic county, Mich. His recommendation is unfavorable.

**DELAWARE & HUDSON.—New Director.**—At the annual meeting of this company, Hanbrook Chahoon was elected a director to succeed the late Chauncey M. Depew.

**DETROIT & MACKINAC.—Abandonment.**—The Interstate Commerce Commission has authorized this company to abandon its Lincoln branch, 14.7 miles.

**GRAND TRUNK (U. S. LINES).—Consolidation.**—A plan for the consolidation of ten of the companies comprising the Grand Trunk Railway System has been adopted by the directors and stockholders of the interested companies and application will be made to the Michigan authorities and to the Interstate Commerce Commission for approval of the plan. The idea has been under consideration for several years and the directors and stockholders gave their approval at meetings held last week. The plan contemplates a total capitalization of \$150,000,000. The new company will have a mileage of approximately 1,000, and, in addition, will be half owner of the Detroit & Toledo Shore Line, and of the Detroit Terminal Railroad, of which C. G. Bowker, general manager of the Grand Trunk, was recently elected president. The executive offices of the new company will be in Detroit. The companies in the proposed consolidation are: Grand Trunk Western, extending from Port Huron to Chicago; Detroit, Grand Haven & Milwaukee, extending from Detroit to Grand Haven, where it connects with the Grand Trunk-Milwaukee Car Ferry for Milwaukee; Chicago, Detroit & Canada Grand Trunk Junction, extending from Detroit to Port Huron; Toledo, Saginaw & Muskegon, extending from Muskegon to Durand, where it connects with the Grand Trunk Western and the Detroit, Grand Haven & Milwaukee; Pontiac, Oxford & Northern, extending from Caseville to Pontiac, where it connects with the Detroit, Grand Haven & Milwaukee, and the Michigan Air Line; the Michigan Air Line, extending from Jackson to Richmond and connecting at Pontiac with the Detroit, Grand Haven & Milwaukee and the Pontiac, Oxford & Northern, and at Richmond with the Chicago, Detroit & Canada Grand Trunk Junction; the Detroit & Huron, extending from Bad Axe to Cass City, and connecting at Cass City with the

Pontiac, Oxford & Northern; the Grand Rapids Terminal, which is the terminal of the Detroit, Grand Haven & Milwaukee at Grand Rapids; the Chicago & Kalamazoo Terminal, which is the terminal of the Grand Trunk Western at Kalamazoo; and the Bay City Terminal, which is the Grand Trunk terminal at Bay City. In discussing the consolidation, Mr. Bowker said:

The Grand Trunk System has been carrying on an extensive expansion program during the past several years. The plan assures the continuance of this expansion program by providing \$30,000,000 to be used in development and improvement of the lines within the next five years. The consolidation will further assure the continued expedited service given by the Grand Trunk, with correspondingly more efficient and economical handling of traffic.

The Grand Trunk has a progressive and aggressive management with headquarters in Detroit which will be in full charge of the operations of the new company. We believe that the consolidation plan will enable us to operate these lines for the greater benefit of the many important points reached by our rails. The title Grand Trunk will be retained in the name of the new company.

**GREAT NORTHERN.—Six Months Guaranty.**—The Supreme Court of the United States, in a decision rendered on May 14, affirmed the judgment of the district court for the district of Minnesota, which had denied this company's petition for an order setting aside the Interstate Commerce Commission's revised certificate for the amount due the company on account of the six-months guaranty for the period following the period of federal control. The commission had issued certificates for advance and partial payments on account of the guaranty, but later issued a corrected certificate holding that the company had been overpaid and that it should repay the government. The railroad contested the commission's right to issue a revised certificate for a smaller amount.

**LEHIGH & NEW ENGLAND.—Annual Report.**—The annual report for 1927 shows net income after interest and other charges of \$1,081,183 as compared with net income in 1926 of \$1,364,044. Selected items from the income statement follow:

	1927	1926
Average mileage operated .....	216.73	219.05
RAILWAY OPERATING REVENUES .....	\$5,798,454	\$5,662,328
Maintenance of way .....	641,674	593,650
Maintenance of equipment .....	1,230,010	1,153,708
Transportation .....	1,927,505	1,716,128
TOTAL OPERATING EXPENSES .....	4,037,225	3,698,825
Operating ratio .....	69.63	65.32
NET REVENUE FROM OPERATIONS .....	1,761,228	1,963,503
Railway tax accruals .....	249,416	294,804
Railway operating income .....	1,511,675	1,668,319
Hire of freight cars—Cr. Bal. ....	13,579	136,674
Joint facility rents, Dr. ....	114,009	105,260
Non-operating income .....	85,568	190,075
GROSS INCOME .....	1,597,242	1,858,394
Interest on funded debt .....	360,187	335,525
TOTAL DEDUCTIONS FROM GROSS INCOME .....	516,060	494,349
NET INCOME .....	1,081,183	1,364,044

**LOS ANGELES & SALT LAKE.—New Director Elected.**—F. W. Charske, vice-



chairman of the finance committee of the Union Pacific System at New York, has been elected a director, succeeding J. R. Clark of Los Angeles, Cal.

**MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.**—*Annual Report.*—The annual report for 1927 shows net income after interest and other charges of \$1,541,904, equivalent after allowance for the 7 per cent dividends on the preferred stock, to \$2.61 per share on the outstanding common stock. Net income in 1926 was \$15,860, or \$0.12 per share. Selected items from the income statement follow:

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE		
	1927	1926
RAILWAY OPERATING REVENUES .....	\$49,157,009	\$46,856,739
Maintenance of way .....	6,231,436	6,526,430
Maintenance of equipment .....	8,695,413	8,846,291
Transportation .....	18,046,384	17,829,202
TOTAL OPERATING EXPENSES .....	35,735,614	35,696,798
Operating ratio .....	72.69	76.18
NET REVENUE FROM OPERATIONS .....	13,421,395	11,159,940
Railway tax accruals .....	2,964,415	2,799,810
Railway operating income .....	10,447,488	8,347,407
Equipment rents, Dr. .....	1,051,928	605,927
Joint facility rents, Dr. ....	732,212	734,220
NET RAILWAY OPERATING INCOME .....	Not shown	7,007,261
Non-operating income .....	940,412	135,449
Interest on funded debt .....	Not shown	6,855,952
TOTAL DEDUCTIONS FROM GROSS INCOME .....	9,883,061	6,991,401
NET INCOME .....	1,541,904	15,860

**MISSOURI PACIFIC.**—*New Director Elected.*—Herbert L. Utter, secretary and treasurer of the Missouri Pacific, and vice-president, assistant secretary and assistant treasurer of the International Great Northern and the San Antonio, Uvalde & Gulf, has been elected a member of the board of directors succeeding George W. Niedringhaus, deceased.

**NEW YORK, SUSQUEHANNA & WESTERN.**—*Abandonment.*—The Interstate Commerce Commission has after rehearing affirmed its previous decision authorizing this company to abandon its 3.1-mile Delaware branch in Warren county N. J.

**PENNSYLVANIA.**—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Baltimore & Eastern by purchase of \$191,500 par value of its stock for the nominal sum of \$1. The stock was owned by the Baltimore, Chesapeake & Atlantic, which was recently sold under foreclosure to the Pennsylvania.

**PENNSYLVANIA.**—*Control of Columbus & Xenia.*—The Interstate Commerce Commission has authorized the first named company to acquire the latter by purchase of capital stock. The Pennsylvania operates the property under a lease at a rental which, with interest on securities owned, brings the Xenia's stockholders a return of 8.6 per cent. There are 35,724 shares outstanding, \$50 par, of which the Pennsylvania owns 29 per cent.

The Pennsylvania is offering \$115 for this stock and has been assured of the acquisition of 70 per cent of the total at this price. The commission's tentative valuation, plus capital expenditures since, shows an equity of \$150 per share at cost of reproduction new or \$115 per share at cost of reproduction less depreciation. Commissioner Eastman dissented.

**PERE MARQUETTE.**—*Annual Report.*—The annual report for 1927 shows net income after interest and other charges of \$7,176,924 as compared with net income in 1926 of \$7,702,004. Selected items from the income statement follow:

PERE MARQUETTE		
	1927	1926
Average mileage operated .....	2,244.09	2,246.79
RAILWAY OPERATING REVENUES .....	\$44,744,593	\$45,799,700
Maintenance of way .....	4,921,516	4,866,508
Maintenance of equipment .....	9,515,272	9,529,996
Transportation .....	15,105,884	15,457,783
TOTAL OPERATING EXPENSES .....	31,639,864	31,886,011
Operating ratio .....	76.28	74.88
NET REVENUE FROM OPERATIONS .....	13,104,729	13,913,689
Railway tax accruals .....	2,491,074	2,409,488
Equipment rents, Net .....	711,860	923,186
Joint facility rents, Net .....	602,425	773,888
NET RAILWAY OPERATING INCOME .....	9,291,668	9,793,224
Other income, Net .....	449,402	474,527
GROSS INCOME .....	9,741,070	10,267,751
Interest accruals .....	2,564,145	2,565,748
SURPLUS .....	7,176,924	7,702,004

**PITTSBURGH & WEST VIRGINIA.**—*Six Months Guaranty.*—The Interstate Commerce Commission has issued a certificate to the Treasury stating the final amount of this company's guaranty for the six months period following the termination of federal control in 1920 as \$206,337, of which \$31,337 remained to be paid on the final certificate.

**PITTSBURGH & WEST VIRGINIA.**—*Annual Report.*—The annual report for 1927 shows net income after interest and other charges of \$2,524,943 compared with net income in 1926 of \$3,211,193, or \$10.62 per share on the capital stock. Selected items from the income statement follow:

PITTSBURGH & WEST VIRGINIA		
	1927	1926
RAILWAY OPERATING REVENUES * .....	\$4,011,616	\$5,156,484
TOTAL OPERATING EXPENSES * .....	2,413,547	2,902,850
NET REVENUE FROM OPERATIONS .....	1,598,069	2,253,634*
Railway tax accruals* .....	592,726	705,922
Railway operating income .....	1,005,279	1,547,563*
Hire of freight cars, Net* .....	897,621	Cr. 1,163,153
Joint facility rents, Net Dr.* .....	10,865	10,842
NET RAILWAY OPERATING INCOME* .....	1,906,221	2,713,041
Non-operating income .....	1,201,983	1,207,205
GROSS INCOME .....	3,108,204	3,920,246
Rent for leased roads .....	270,728	505,439
Interest on funded debt .....	190,725	177,750
TOTAL DEDUCTIONS FROM GROSS INCOME .....	583,261	709,053
NET INCOME .....	2,524,943	3,211,193

\* Includes West Side Belt Operations.

**QUEBEC, SAGUENAY & CHIBOUGAMAU.**—*Bonds.*—A Montreal syndicate is offering \$3,500,000 of 6 per cent 15-year bonds of this company at par with a bonus of one share of \$100 common stock per \$1,000 bond. The company will serve the Lake St. John district in Northern Quebec, at present being extensively developed for its agricultural, mineral, pulpwood and hydro-electric resources. It is being subsidized to some extent by the Quebec government and has close relationships with the Canadian National.

**SEABOARD AIR LINE.**—*New Directors.*—John Ringling and Clarke G. Dailey have been elected directors of this company.

**SEABOARD AIR LINE.**—*Equipment Trust.*—The Interstate Commerce Commission has authorized this company to assume obligation and liability in respect of \$1,200,000 first-lien, \$420,000 second-lien and \$28,977 deferred equipment trust certificates, Chase National Bank, New York, trustee. The first-lien issue bearing interest at 4½ per cent, will be sold to Freeman & Co., New York, at 97.719; the second-lien, bearing interest at 5 per cent, will be subscribed for by the Baldwin Locomotive Works and the American Car & Foundry Co. at par; the railroad will purchase the non-interest bearing deferred certificates.

**ST. LOUIS-SAN FRANCISCO.**—*Equipment Trust Certificates.*—The Interstate Commerce Commission has authorized an issue of \$6,000,000 of equipment trust certificates, to be sold at not less than 98.011 and interest.

**WICHITA FALLS & SOUTHERN.**—*Securities.*—The Interstate Commerce Commission has authorized this company to issue \$1,176,700 of common stock, \$100 par, and \$2,000,000 of first mortgage and collateral lien 5½ per cent bonds, and to issue \$56,354 of promissory notes. The bonds will be purchased by the stockholders at 90 per cent of par, to yield 6.241 per cent, unless a better price obtained elsewhere.

### Valuation Reports

The Interstate Commerce Commission has issued final valuation reports, finding the final value for rate-making purposes of the property owned and used for common-carrier purposes, as of the respective valuation dates, as follows:

Yosemite Valley .....	\$3,356,492	1916
Nelson & Albemarle .....	139,225	1916
San Antonio, Uvalde & Gulf ..	4,464,300	1919

### Dividends Declared

Bangor & Aroostook.—Common, \$0.87, quarterly; preferred, \$1.75, quarterly, both payable July 1 to holders of record May 31.

Pittsburgh, Bessemer & Lake Erie.—Preferred, \$1.50, payable June 1 to holders of record May 15.

Union Pacific.—Common, 2½ per cent, quarterly, payable July 2 to holders of record June 1.

### Average Prices of Stocks and of Bonds

	Last May 15	Last week	Last year
Average price of 20 representative railway stocks ..	127.43	127.55	112.08
Average price of 20 representative railway bonds ..	96.22	96.35	94.70

## Officers

### Executive

**H. M. Irwin** has been appointed assistant to the president of the Delaware & Hudson, with headquarters at New York City, succeeding **F. W. Leamy**, promoted.

**H. B. Robertson**, auditor of the Longview, Portland & Northern, with headquarters at Longview, Wash., has been appointed assistant to the vice-president and general manager, with headquarters at the same point.

**C. S. Krick**, vice-president of the Eastern region of the Pennsylvania, with headquarters at Philadelphia, Pa., has also been elected president of the Baltimore & Eastern and the Baltimore & Virginia Steamboat Company, with headquarters at the same point, in addition to his other duties. **M. W. Clement**, operating vice-president of the Pennsylvania system, with headquarters at Philadelphia, Pa., has also been elected vice-president of the Baltimore & Eastern and the Baltimore & Virginia Steamboat Company, with the same headquarters.

**F. W. Leamy**, who has been appointed vice-president of the Delaware & Hudson, with headquarters at New York, was born on November 3, 1886, at West Rutland, Vt. He entered the service of the Delaware & Hudson at West



F. W. Leamy

Rutland in 1903, remaining there until 1905 when he came to New York as a ticket salesman. He served as a stenographer in the president's office at the time when David Wilcox was president and was appointed secretary to Mr. Loree when the latter became president in 1907. He was appointed assistant to the president in 1923, serving in this capacity until his recent appointment as vice-president. Mr. Leamy served as assistant secretary of the Wheeling & Lake Erie when Mr. Loree was chairman of that line in 1917. He is also secretary of the Eastern Presidents' Conference.

**T. H. B. McKnight** who has been elected vice-president of the Pittsburgh, Cincinnati, Chicago & St. Louis and the Pennsylvania Company, was born at Pittsburgh, Pa., on November 15, 1859. He was educated in the private schools and at the University of Pittsburgh, entering railway service on May 31, 1877, as messenger in the office of the second vice-president and the treasurer of the Pennsylvania Lines West of Pittsburgh. He served consecutively to May 1, 1891, in various clerkships and as



T. H. B. McKnight

chief clerk in the treasury department. From May 1, 1891, to March, 1920, he served as treasurer for the same lines and from March, 1920 to April, 1928, he served in the same capacity for the Central, Northwestern and Southwestern regions of the Pennsylvania System (of which the Pennsylvania Lines West of Pittsburgh are now a part), being promoted to the position of vice-president of the Pennsylvania and the Pittsburgh, Cincinnati, Chicago & St. Louis on the latter date. Mr. McKnight was one of the organizers of the Railway Treasury Officers' Association and has served as its president three times.

### Financial, Legal and Accounting

**Louis P. Wohlfeil**, assistant general auditor of the Green Bay & Western, with headquarters at Green Bay, Wis., has been appointed acting general auditor, with headquarters at the same point, succeeding **J. C. Thurman**, deceased.

**D. M. Burgess** has been appointed auditor of the Longview, Portland & Northern, with headquarters at Longview, Wash.

**Elmer Hart**, assistant comptroller of the Pennsylvania, with headquarters at Philadelphia, Pa., has in addition been appointed assistant comptroller of the Baltimore & Eastern and the Baltimore & Virginia Steamboat Company, with the same headquarters.

**L. J. Tracy**, assistant comptroller of the Union Pacific System, with headquarters at New York, has been promoted to comptroller, with headquarters at the same point, succeeding **F. W. Charske**, vice-president of the finance

committee, and comptroller, who retains the title of vice-chairman of the finance committee.

### Operating

**J. L. Bromley** has been appointed chief dispatcher of the Farnham division of the Canadian Pacific, succeeding **O. Pepin**, transferred.

**W. R. Martin**, who was successively superintendent of the El Paso division of the Southern Pacific, general manager of the El Paso & Northeastern (now a part of the Southern Pacific), and superintendent of the Gila Valley, Globe & Northern (also a part of the Southern Pacific) from 1890 to 1906, has retired from active railroad service. For the past 22 years he had been superintendent of the El Paso (Tex.) passenger station of the Southern Pacific.

**E. S. Reed** has been appointed assistant trainmaster on the Eastern division of the Pennsylvania, with headquarters at Canton, Ohio. **J. M. Reed** has been appointed assistant trainmaster on the Wheeling division, succeeding **W. C. Kashner**, who has been transferred to the Eastern division, with headquarters at Mansfield, Ohio. **J. B. Hays**, chief transportation clerk on the Eastern Ohio division at Pittsburgh, Pa., has been promoted to assistant trainmaster on the Eastern division, with headquarters at Island Avenue, Pittsburgh.

**D. C. Allen**, supervisor of service in the office of the general superintendent of transportation of the Western region of the Pennsylvania at Chicago, has been appointed assistant trainmaster on the Logansport division, succeeding **T. L. Young** who has been transferred to the St. Louis division. **H. G. Warvel**, trainmaster on the Richmond division which was abolished on May 1, has been appointed assistant trainmaster on the Grand Rapids division. **E. O. Sieweke**, assistant trainmaster on the Richmond division, has been transferred to the Cincinnati division.

**E. W. Smith**, general manager of the Eastern region of the Pennsylvania, with headquarters at Philadelphia, Pa., has also been appointed general manager of the Baltimore & Eastern and the Baltimore & Virginia Steamboat Company, in addition to his other duties. **W. M. Wardrop**, general superintendent on the Pennsylvania has also been appointed general superintendent of the Baltimore & Eastern and the Baltimore & Virginia Steamboat Company, with headquarters as before at Wilmington, Del. **J. G. Shaeffer**, division superintendent of the Pennsylvania at Wilmington, has in addition been appointed superintendent of the Baltimore & Eastern and the Baltimore & Virginia Steamboat Company, with the same headquarters.

**W. C. Higginbottom**, general superintendent of transportation of the Western region of the Pennsylvania, with headquarters at Chicago, has been promoted to general superintendent of the



newly created Northwestern division, with headquarters at the same point. A sketch of Mr. Higginbottom's railway career and a reproduction of his photograph appeared in the *Railway Age* of June 25, 1927, page 2030, on the occasion of his promotion to general superintendent of transportation. **C. E. Whitlock**, superintendent of the Pittsburgh division, with headquarters at Pittsburgh, Pa., has been promoted to general superintendent of the newly created Southwestern division, with headquarters at Indianapolis, Ind. **E. W. Perrott**, assistant to the general superintendent of transportation of the Western region, with headquarters at Chicago, has been promoted to superintendent of freight transportation of that region, with headquarters at the same point. **J. M. Symes**, chief clerk to the general manager of the Western region at Chicago, has been promoted to superintendent of passenger transportation of the Western region, with headquarters in the same city. **J. A. Appleton**, superintendent of the Columbus division, with headquarters at Columbus, Ohio, has been transferred to the Pittsburgh division, succeeding Mr. Whitlock. Mr. Appleton has been replaced at Columbus by **J. C. Rill**, superintendent of the Logansport division, with headquarters at Logansport, Ind. **H. A. Hobson**, assistant superintendent of the New York Division, with headquarters at Jersey City, N. J., has been promoted to superintendent of the Logansport division to succeed Mr. Rill. The position of superintendent of the Ft. Wayne division, with headquarters at Ft. Wayne, Ind., left vacant by the transfer of **R. H. Pinkham** to the engineering department has been filled by the transfer of **J. G. Shaeffer**, who was superintendent of the Delaware division, with headquarters at Wilmington, Del. **R. P. Graham**, division engineer of the Middle division, with headquarters at Altoona, Pa., has been appointed superintendent of the Delaware division to replace Mr. Shaeffer.

**J. C. Roth**, general inspector of transportation of the Chicago, Burlington & Quincy, with headquarters at Chicago, has been promoted to superintendent of transportation, with headquarters at the same point. **L. C. Twyman**, general chief clerk of the transportation department at Chicago, has been promoted to assistant superintendent of transportation, with headquarters in the same city. **W. L. Barnes**, general superintendent of transportation, with headquarters at Chicago, retired from active duty on May 15 at his own request after 55 years of continuous service on the Burlington. The position of general superintendent of transportation has been abolished. Mr. Barnes entered the service of the Burlington on March, 1873, as a station helper, later being advanced to telegraph operator at Kirkwood, Ill. He then served successively from 1880 to 1904 as train dispatcher at Galesburg, Ill.; as trainmaster of the Chicago division at Fulton, Ill.; as chief dispatcher at Galesburg, and as superintendent of special freight and car service, with headquar-

ters at Chicago. In June, 1904, Mr. Barnes was promoted to superintendent of transportation, with headquarters at Chicago, where he remained until February, 1917, when he became a member of the Commission on Car Service of the American Railway Association at Washington, D. C. From January, 1918, to May, 1920, he was assistant manager of the Car Service Section of the Division of Operation of the Railroad Administration at Washington and he was then appointed assistant to the president of the American Railway Association. Mr. Barnes became executive manager of the Car Service Division of the A. R. A. on July 1, 1920, returning to the Burlington as general superintendent of transportation on August 1, 1921.

**Walter T. Moodie**, who has been promoted to general superintendent of the Northern Ontario district of the Canadian National, with headquarters at North Bay, Ont., has been connected with that railroad and the companies from which it was formed for 20 years. He was born on March 10, 1882, at Glasgow, Scotland, and attended the Allan Glens School and the Royal Technical College at Glasgow. Mr. Moodie entered railway service in April, 1903, as assistant engineer on the Caledonian Railway of Scotland (now part of the London, Midland & Scottish), leaving England early in 1905 to become engineer on location and construction of the Central South African Railway at Johan-



Walter T. Moodie

nesburg, Transvaal. Later he engaged in engineering work in connection with location, construction and line betterment on railways in the Orange Free State and the Transvaal in South Africa. He came to Canada in May, 1908, and was appointed an engineer in the construction department of the Canadian Northern (now part of the Canadian National). Three years later he was promoted to division engineer, becoming district engineer at Winnipeg, Man., in December, 1916. Mr. Moodie entered the operating department of the Canadian National in January, 1919, as superintendent of the Rainy River division, with headquarters at Port Arthur, Ont. His promotion to general superintendent

of the Northern Ontario district became effective on May 1.

## Engineering, Maintenance of Way and Signaling

**W. S. Johns, Jr.**, engineer of maintenance of way of the Western region of the Pennsylvania, with headquarters at Chicago, has been appointed engineer of maintenance of way of the newly created Northwestern division, with headquarters at the same point. A sketch of Mr. Johns' railway career and a reproduction of his photograph appeared in the *Railway Age* of March 3, page 560, on the occasion of his promotion to engineer of maintenance of way on the staff of the chief engineer of the Western region. **R. H. Pinkham**, superintendent of the Ft. Wayne division, with headquarters at Ft. Wayne, Ind., has been appointed engineer of maintenance of way of the newly created Southwestern division, with headquarters at Indianapolis, Ind.

**J. C. White**, division engineer of the recently abolished Richmond division of the Pennsylvania, has been transferred to the Logansport division, with headquarters at Logansport, Ind., succeeding **D. B. Johnson**, who has been appointed assistant engineer of maintenance of way in the office of the chief engineer of maintenance of way of the Western region, with headquarters at Chicago. **F. A. Cellar**, assistant to the division engineer of the Richmond division, with headquarters at Richmond, Ind., has been transferred to the Cincinnati division, with headquarters at Cincinnati, Ohio.

## Traffic

**Rufus D. Heusner**, coal freight agent of the Reading, with headquarters at Philadelphia, Pa., who has been appointed general coal freight train agent, with the same headquarters, was born at Attica, N. Y., in 1882. He entered railway service with the New York Central in 1898. He subsequently served with the Philadelphia & Reading as a clerk at Rochester, N. Y. From 1905 to 1906 he was traveling freight agent for the same road, and at the latter time he became New York State agent. From 1909 to 1922 he served as division freight agent at Harrisburg, Pa. He was then appointed coal freight agent for the Reading, serving in this capacity until his recent promotion.

**R. E. Buchanan**, executive general agent of the St. Louis-San Francisco, with headquarters at Memphis, Tenn., has been appointed assistant traffic manager in charge of the recently opened Pensacola division, with headquarters at Pensacola, Fla. **D. F. McDonough**, division freight agent at Birmingham, Ala., has been appointed executive general agent at Memphis, succeeding Mr. Buchanan.

**William B. Gheen**, who has been appointed assistant freight traffic manager of the Reading Company, with headquarters at Philadelphia, Pa., was born at West Chester, Pa. He entered railway service with the Reading on May



William B. Gheen

20, 1901 as station agent and telegraph operator. From March 1, 1920, to April 1, 1923 he served as division freight agent and on the latter date he became coal freight agent. He was made general freight agent on May 16, 1927, serving in this capacity until his recent appointment as assistant freight traffic manager.

## Mechanical

**H. H. Haupt**, master mechanic in Eastern region of the Pennsylvania, with headquarters at Wilmington, Del., has been promoted to superintendent of motive power of the newly created Northwestern division, with headquarters at Chicago. **G. B. Fravel**, assistant general superintendent of motive power of the Western region, with headquarters at Chicago, has been promoted to superintendent of motive power of the newly created Southwestern division, with headquarters at Indianapolis, Ind.

## Purchases and Stores

**George W. Conway**, general storekeeper of the Louisville & Nashville, with headquarters at Louisville, Ky., has retired after 46 years of service with that road. **Edwin Meyer**, assistant general storekeeper, with headquarters at Louisville, will succeed Mr. Conway as general storekeeper and **E. M. Atkins**, chief clerk, has been appointed assistant general storekeeper, succeeding Mr. Meyer.

## Obituary

**Charles J. Rixey, Jr.**, commerce counsel of the Southern, with office at Washington, D. C., died at Washington on May 8.

**Charles T. Winkler**, assistant superintendent of restaurant service of the

Pennsylvania, with headquarters at Chicago, died in that city on May 12 after an illness of five months.

**A. K. Stone**, safety supervisor of the New York region of the Erie from 1918 until his retirement from active railroad service in 1926 and previous to that time superintendent of the Great Northern at Havre, Mont., died at the Asbury Hospital in Minneapolis, Minn., on May 13.

**Pinkney B. Torian**, superintendent of the New Orleans (La.) terminals of the Southern Pacific lines in Louisiana and Texas, died in that city on May 12 after a protracted illness. Mr. Torian had been in the service of the Southern Pacific and the subsidiaries with which it has been merged for more than 44 years.

**Francis T. A. Junkin**, general attorney of the Atchison, Topeka & Santa Fe, with headquarters at Chicago, from 1898 to December, 1914, died at his home in Washington, D. C., on May 6th. Mr. Junkin was born at Falling Spring, Va., on February 3, 1864. Prior to his service with the Santa Fe he had been identified with the reorganization of a number of railroad companies, including the Central of Georgia, the Northern Pacific, the Erie, the Oregon Railway & Navigation Company and the Union Pacific.

**Samuel Baily Moore**, superintendent of the Parsons district of the Missouri-Kansas-Texas, with headquarters at Parsons, Kan., who died at Kansas City, Mo., on April 26, was born on January 30, 1883, at Birmingham, Ala. He entered railway service at the age of 13 years as an operator on the Gulf & Ship Island and then served consecutively with the Louisville & Nashville, the Southern and the St. Louis-San Francisco as dispatcher, chief dispatcher, switchman, yardmaster, trainmaster and superintendent. In 1915 Mr. Moore was appointed trainmaster on the Katy at Denison, Tex., where he remained until 1918 when he was transferred to Parsons. He was promoted to superintendent of the Parsons district of the Katy in 1919.

**John Henry Pahlmann**, general auditor of the St. Louis Southwestern, with headquarters at St. Louis, Mo., who died of pneumonia on May 4, after an illness of two months, had been in the service of the Cotton Belt for 34 years. Mr. Pahlmann was born at St. Louis, Mo., on June 21, 1865, and after attending public schools in Illinois he attended the Normal College at Danville, Ill., until 1884. He first entered railway service on December 28, 1889, as clerk to the roadmaster of the St. Louis, Arkansas & Texas (now the St. Louis Southwestern) at Tyler, Tex., and on September 30, 1890, he went into commercial business at St. Louis. On December 15, 1892, he returned to railway service as road clerk on the Cotton Belt at Commerce, Tex., where he remained until September of the following year when he resigned to engage in private business, later becoming a clerk in

the offices of the American Refrigerator Transit Company at St. Louis. Mr. Pahlmann entered the accounting department of the Cotton Belt on February 15, 1896, as a clerk in the general accounts division, remaining continuously in that department in various capacities until February 1, 1919, when he was promoted to auditor of disbursements, with headquarters at St. Louis. Mr. Pahlmann was promoted to general auditor of the Cotton Belt on May 1, 1924.

**Howard G. Kelley**, former president of the Grand Trunk, now a part of the Canadian National, died suddenly at San Diego, Cal., on May 15. He was born on January 12, 1858, at Philadelphia, Pa., and was graduated from the Polytechnic College of Pennsylvania. He began railroad work in 1881 as assistant engineer on location and construction on the Northern Pacific. In 1884 he left the Northern Pacific to engage in mining and three years later he entered the service of the St. Louis Southwestern as resident engineer and superintendent of bridges and buildings. Two years later he became chief engineer. On March 1, 1898, he became consulting engineer of the St. Louis Southwestern and also chief engineer of the Minneapolis & St. Louis. On July 4, 1907, Mr. Kelley was appointed chief engineer of the Grand Trunk System and on October 1, 1911, he was appointed vice-president in charge of construction, operation and maintenance. From September 1, 1917, to August 14, 1922, he served as president of the same road. During this time he also served as chairman of the board of the Central Vermont. After the



Howard G. Kelley

Canadian Government took over the Grand Trunk, Mr. Kelley returned to the United States, where he was actively engaged as a railroad expert. Among the major tasks which he completed in this field was the investigation and report on New England railroad problems for the New England Governors' Committee. Mr. Kelley served as president of the American Railway Engineering and Maintenance of Way Association from 1905 to 1907.



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